MODEL-STORE
DEMONSTRATION DRILLS
VOLUME I

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HENRY STERLING CHAPIN

Class L B 1520

Book C 4

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THE MODEL-STORE IN MISSOURI

SALESMAN, CLERK AND CUSTOMERS

THE MODEL-STORE IN NEW YORK STATE

"PLAY" THAT ACCOMPLISHES MORE THAN "WORK"

"MODEL-STORE"

Demonstration Drills

Volume I

By HENRY STERLING CHAPIN

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no 1.

TO THE HUNDREDS OF EARNEST AND DEVOTED TEACHERS
WHOSE FAITHFUL EFFORTS TO AID THEIR PUPILS
HAVE HELPED TO EVOLVE THESE DRILLS,
AND TO MISS MARIE HAMMOND, WHOSE ABLE AND UNTIRING
CO-OPERATION WAS ENJOYED WHILE ASSEMBLING
THE MATERIAL IN ITS PRESENT FORM,
THIS BOOK IS GRATEFULLY DEDICATED.

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GUIDE TO PART TWO

The various "plays" for getting the boxes into the pupils' hands and arousing their interest in the lesson to follow are always practice in the fundamentals and are so employed in the upper grades.

The obvious uses of "store keeping" in school are omitted. These drills are to help teachers to employ the store to advantage in ways that they are not likely to think of, especially during the early stages of store use.

But, once the basic idea is grasped, it will be realised that the plays are largely interchangeable, by changing the number of boxes used and the teacher's explanations.

Therefore it is advisable that a teacher should run through the drills of all grades, at least through the Fifth Year, to become familiar with as many different forms of play as possible.

A drill scheduled to illustrate subtraction may be readily transposed to practice multiplication or division. The form of play in Drill 11, set down as practice in division can be used for advanced pupils in review of addition or subtraction by changing a few words. Hence teachers will find Drill 11 listed under Addition and Subtraction, after the early drills (lower numbers) and several similar guides to interchangeable forms of play.

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Introduction

Object teaching is no new thing. It has been an important factor in education for many years. It was first promulgated in the 16th century by the Jansenists (also called Port Royalists because of their school at Port Royal) a Catholic faction opposed to Jesuitism. From COMENIUS to MONTESSORI the great reformers have endorsed the principle and urged the practice.

The utilization of play in educative processes is also well credentialed. ROUSSEAU carried the idea to the extreme of believing that up to 12 years of age at least, the child needs no means of acquiring knowledge other than freedom to play, freedom being the fundamental law of education.

These two principles, object teaching and the utilization of play, constitute the basic elements of the method elaborated in the present volume. This method differs from all others in the nature of the objects used, in the manner and variety of their uses, in the immediateness and definiteness of results and in the fact that it addresses itself to a form of play that is universally popular and that possesses a maximum of educational possibilities.

The method is distinct also in the fact that it brings a group of influential manufacturers of standard products into a relationship with the schools that is in itself a marked benefit both to the schools and to the manufacturers. All vital issues are inter-related. All true progress is cooperative. Business and education are not separate compartments in human affairs wherein the concerns of the one are to be kept forever isolated from the concerns of the other. They are rather blending parts in the orchestration of social betterment. To demonstrate this mutuality of interest as has already been done in the instance of the "Model-Stores" is a noteworthy achievement most gratifying to intelligent citizens who have had reason to lament the isolation of the schools. Never before have pupils had to the same extent the advantage of learning by doing.

To organize and direct a movement such as is here described has required considerable foresight and has involved no small measure of responsibility. MR. CHAPIN has performed his duties with optimism and enthusiasm. Such cooperation as the writer has been able to give has quickened his own sense of the importance of the enterprise. That so much has been done in less than three years is phenomenal. Every detail has been so carefully studied, that while much yet remains to be accomplished, the general plan of operation has been brought to a remarkable degree of efficiency. It has been installed in over 3000 schools has been approved by a number of state and city departments of edu-

cation, and has been voluntarily mentioned by the United States Bureau of Education.

It is now pertinent thus to note that the principles illustrated in the Model-Store-Keeping Method of Instruction are in keeping with the teachings of the illustrious men who have made the mightiest impress upon modern education, that it has clearly demonstrated its unique value to American as well as to English schools, that the work is in competent hands and that it is fully entitled to recognition as a helpful and much needed factor in American education.

This book is both a drill book and a compendium of information on all points relating to the practical application of the plan.

Is it extravagant to hint that it may some day be looked upon as an epoch-marking volume? BACON'S "Novum Organum," COMENIUS'S "Great Didactic," and FROEBEL'S "Education of Man" are imperishable because they stand related to determining influences in pedagogical method. Should the present volume function as the instrumentality thru which the Model-Store-Keeping Method of Instruction for Elementary Schools shall come into universal use, a consummation to be wished most earnestly if not devoutly, and should it convince the manufacturers of appropriate commodities that the whole plan is entitled to their generous support then, surely, it will take its place in history.

William Charles O'Donnell, Jr.
New York, 1917.

". . . .A new education which shall really give an equal chance to every one because it will base itself on the world in which the children live."

DR. JOHN DEWEY

In "Schools of Tomorrow"

Page 170

"Education that can obtain the results required by a civilized community, and yet use the play spirit, is the ideal."

GEORGE DRAYTON STRAYER and NAOMI NORSWORTHY of Teachers' College, Columbia University

In "How to Teach"

Page 140

PART ONE

General Directions for the Use of the Model Store-Keeping Method of Instruction for Elementary Schools.

For the Principal

The Principal's part of the work is to select a teacher to have general charge. If the principal desires, personal attention may also be given to choosing a place in the school for the store.

Deliver this book to the appointed teacher and the rest of the work is automatic. Any further attention is purely optional.

Experience indicates that the teacher who can make a subject as clear to all her pupils in two, or even three lesson periods, as it will be after one Model-Store lesson, has unusual power to interest pupils and hold their attention.

The personal effort and mental focus involved in handling the boxes has an attention value far exceeding that of an objective demonstration with the same boxes handled by the teacher while the class sits still.

Principals will find that the store saves at least one whole lesson period —one day—of the time that otherwise must be allotted to a new subject. That is why the Model-Store saves the teachers' time.

For the Teacher in Charge

The teacher chosen has only to post other teachers who will use the store by letting them read these instructions, and to see that monitors are chosen and briefly instructed in their work, the captains of the monitor squads also being shown the portions of these instructions that outline their duties. A very brief general oversight of the conduct of the monitors is all that remains to be done until the store is ready for practical use by the class.

From this it will be seen that the labor is so organized and divided that no material amount of time or work is required to install the Model-Store.

The Plan

Ever since the Kindergarten proved its value Educators have sought earnestly to apply to higher grades its basic principles, and place before the scholar so absorbing an occupation that the knowledge to be gained will be automatically conveyed by something the scholar eagerly seeks. Play, the very essence of childhood

and indeed the chief joy of later life, is the natural vehicle.

The idea of teaching arithmetic by operating a model store at school has occurred to many and a few partly successful efforts have been made, but at the cost of so much work for so inadequate an equipment that such individual cases are really evidence of a most exceptional energy and devotion even amongst those most faithful of human beings, the school teachers.

It remained for the Head Master of an English school to organize the idea in the useful form in which it is now given to you, ready made, complete. His work has spread through thousands of English schools. To their long experience has been added the practical use of the "store" in thousands of American schools.

Planning class work with this equipment and material in hand is no harder than planning without it, even where different in detail, and the execution of the work, the inculcation of a clear grasp of each new step in study is so easy and so rapid with this aid that teachers' work is materially less, while the class progress is greater and dull children keep abreast of the class, saving many a weary hour both in the classroom and after school hours.

The co-operation of the owner of the United States Rights, coupled with the active support of the manufacturers who supply the equipment have made it possible for schools to enjoy these benefits. Packets of well known articles of commerce are necessary to hold the pupils' interest. These things are not purchasable at any price and can be obtained only by such organized work as has been done by arranging so schools can get the equipment. There must be organization to secure equipment of the right kind, direct its distribution, prepare and supply the instructions, etc. This work has been undertaken with the aid of several prominent manufacturers acting conjointly, and the guidance of the originator. These manufacturers are leaders of enterprise, and in many cases will be recognized as leaders in philanthropy and earnest effort for human progress.

Schools are under no obligation to these patrons; but their standard products add to the interest, the "reality" of the scholars' play. Imitation packets were tried and found wanting. The *real* ones are necessary to the success of the school work. Their empty packets are useful to teachers. Gratitude is due them for making this service possible, and they will appreciate every manifestation of that gratitude that may fall within the scope of the Teacher's daily work.

Receiving and Setting up the Model-Store

The shipments of empty boxes for the store will arrive at different times and it is best to appoint a place and instruct the janitor to assemble the boxes there as they are received. If his services are not available, appoint a monitor or committee of monitors to see the expressman and the parcel post man, possibly in advance. Scholars from the older classes should be chosen.

Location

The best location for the store is in a corner of the assembly room. Next best is the library if you are so fortunate, or the "dead end" of a hallway. A few schools have a spare room or recitation room used by the arithmetic classes in turn just as the store will be used. In such case this room is the obvious location.

There is always a place, even in the most crowded schools. Here's the way a clever principal solved it.

The signs were placed on the walls all around a basement playroom. (Incidentally they brightened the dingy room very much.) Each kind of equipment was put in a box from a nearby store, the boxes piled under the piano (later a small cupboard was found for them). The "salesmen" march to the pile, pick up the nearest box without stopping, look at its contents, walk to the corresponding sign on the wall, face the center of the room, place the box on the floor, and in 20 seconds a "fair" is in progress. Reassembling the equipment is equally quick. After the lesson the "buyers" walk to the different stands and return the packets they have bought, the salesman checking the returned goods against his memorandum of sales. A hallway could be so used, the boxes in the handiest corner, or under the stairs, or in closets.

Carpentry classes of vocational schools have built stores that a real merchant might envy in their own schools and in nearby schools as well. They have railed off shallow bay windows with counters and have suspended shelves from ceilings with window cords, pulleys and balance weights to be pulled down when used.

With these permanent installations movable units to be carried about are also used.

And if you still need help to find a place, write for it.

Instructions to Monitors

Before the work begins let the appointed leaders see the picture of a store unit so the general object will be clear in their minds. You will be surprised at the judgement and taste your orderlies will manifest in setting up the store; with, perhaps, an occasional suggestion. You will be affected by the craving for neatness and beauty evidenced by many children from cheerless homes, if you have such in your class.

When the first six or eight packages have arrived, have the outer packing opened ready for removal of contents, taking note of the identifying number of each. Here comes the first "lesson" viz.: neatness and orderliness. At least one monitor or orderly from *each* arithmetic class should be appointed to this work of setting up the store, perhaps twelve altogether, allotting one to each package of equipment with a few general helpers. You can afford to use a fair proportion of the duller children choosing from the many volunteers you will have in response to your call. Usually they can do this by coming early, staying late, or on a rainy day during a recess.

Special Monitors should see that boards and packing boxes from the grocery, or other means of making a shelf or counter have been gathered in and deposited with the packages.

A long board, 8 to 12 inches wide, is really better than a table because it takes much less room set against the wall and more children can be served at once, as the packets are more accessible.

"Here comes the Store"

The Movable-Unit Plan

It is best to plan the store in a group of separate boxes similar in size and shape, laid on their sides, that may be stacked together and look store-like on any desk or table, or even on the floor. These are so light as to be portable even by small children acting as monitors, taking a box each, or one in each hand.

By this arrangement no permanent space is required. All grades and classes can use it effectively. Each teacher can have the store in her own room at the time it is needed, keeping the pupils at their accustomed desks, maintaining order, and keeping the books, papers, pencils and blackboards handy. It can be divided and used in two or more classrooms at the same time. Classes are not required to march through hallways to any store location.

This plan has proved very successful. In very crowded quarters each teacher keeps one such box or "unit" on or under her desk, or between the

desks of seat-mates who are given the care of the box and sends monitors for others as needed, thus "storing" the equipment where there seemed no room at all.

Take Inventory Of Goods Received

See Drills I to VIII.

Send for renewals of soiled, damaged or missing articles. The inventory lessons suggestions show the easiest way to make the list, and are very practical for instruction or review in nearly every class.

Use of Signs

The signs are used to show where things belong in the store so any one can put them back in the right place in a moment. They give the appearance of a real store and a general effect that is attractive to the children.

The Order of Events

First, choose the place in the school.

Second, ask for volunteer monitors, explaining the plan to them briefly. (If desired change monitors weekly so all will have a chance.) Ask the monitors to secure (a) the boards and boxes or other material; (b) cloth or paper to cover the boxes, tacks and tack hammer. Experience shows that monitors will find and bring in all these things when told why they are needed; (c) paper coins made by writing figures on cardboard and cutting up the cardboard into convenient squares to represent pennies, nickels, dimes, quarters and half dollars. Many schools now provide paper money on requisition which will serve better.

Third, when these things arrive have the monitors unpack the goods, open the "flat" cartons and fold in the ends so they will stay box-shape (this is regular "manual training" work in lower grades in many states, and can be so utilized), set up the boxes, cover them with paper, tack the signs in the boxes putting the correct signs in the boxes of each manufacturer thus producing a series of "departments" making it easy to sort the goods back into the store after the lesson.

Do not set the store too high. Remember that the children average less stature than your own. Make it their store, their size.

The physicial equipment is thus made ready by willing workers with a little guidance from the teacher and no hard work for anyone.

An Early Utility

Acknowledging the receipt of the equipment to the manufacturer is easiest and best accomplished by the following plan.

Have every scholar who is old enough, in every class, as *home work* **composition lessons,** prepare a short note of acknowledgment and thanks to each manufacturer, to sign the principal's name per their own. If they need the help of parents and can get it, all the better, because to many this will be the first "real business letter" and the interest in the store will be fixed and confirmed. This composition practice is excellent because the composition *has a purpose.* which even small children realize.

Parental help will deepen the sense of reality, the force of the lesson. Caution them to write short notes; tell them that the notes will be actually sent, after the composition has been checked by the teacher in the usual routine. Send them to Model Store Keeping Dept., *Educational Foundations*, 33 East 27th Street, New York, marked "Acknowledgments, Grade ——, School ——" No letter need be written, and the manufacturers will be advised. This plan saves the Principal's time, adds nothing to the teacher's work, provides the best of composition practice, intensifies interest in the labor saving store work, and automatically informs the parents arousing their interest in the school work. Many teachers have found that this has proved so valuable in arousing the keen interest of their pupils that they plan in the course of the season to have every scholar write to every manufacturer, even long after the reason for acknowledgment is passed. Thousands of these letters have given the manufacturers tangible evidence that their aid and support are appreciated, which encourages them to supply materials for other schools.

If this cannot be done please write an acknowledgment **naming** (by address on labels) **equipments that have been received** thus—We have received No. 13, No. 6, No. 24, etc.

The Publisher will appreciate any class work that can be spared: orders, bills, inventories, compositions, business letters, drawings and sketches, etc., however rough. They help greatly in planning and maintaining the service.

The Routine Use of the Model-Store-Keeping Method

Note: The position of salesman is eagerly sought. Some teachers make it a reward of merit. Others prefer to have the whole class take turns at it for practice. The number of salesmen depends on the physical arrangement of your store and sometimes on the character of the lesson.

First make pupils feel that it is **their** store collectively. That it is meant to make school pleasanter and easier for them. That **they** are its guardians, to keep the store neat, clean, undamaged and orderly. This attitude is helped by having the monitors set it up. Do not set it up for them if you can avoid it. If they lose or damage equipment never mind but send for replacements.

"Practice makes perfect." Classroom practice should not be replaced by the store, but the child's grasp of each new step—the **ability to practice** and attain proficiency—can be gained at this store and nothing has ever been found that gives this grasp of each new step in arithmetic so quickly as the store.

Hence the best use of the store is **occasionla** by each class, and once or twice a week will be found often enough. Thus all classes in turn can use the store and one equipment is sufficient for a large school.

The second grade class can follow a seventh grade class at the counter because the difference lies in the application or method, not in any need for a change in the store itself.

The children are absorbed in **what** they select.

The teacher cares only **how many** she tells them to get.

The following drills for class work are the result of long use of the store and will enable any teacher to use the equipment for any class for the work outlined in the syllabus. It seems best to make these drills brief and simple in this initial volume.

Experience shows that, once started, every teacher develops his or her own ideas for extension of the work; and, that these may be utilized by all who so desire, there is a department in Educational Foundations devoted to correspondence with teachers, hints and helps on the Model Store Keeping Method, and articles by the originators and those who have brought the method to its wonderful development in England and the United States.

The Main Point

The basic principle in all grades is to allow the children to "buy" at the store, just what they choose. You govern the examples by the number of the things you tell the pupils to buy. The widest possible personal selection from the objects on view is the source of their absorption in the "play," the means of unconsciously producing their own "examples" or problems insuring a personal desire to know the result which fixes the utility of arithmetic in mind.

Ordinarily each new step in arithmetic appeals to the child as a new difficulty encountered, a new task, invented to make life harder. The writer well remembers asking his teacher "Why is a discount" and the teacher's inability to make plain to a child's mind **the reason** for the new lesson; and that question was not answered in that child's mind until after two years of business life, when discounts came to mean bread and butter.

But the scholar who goes to the counter, instructed to "be a dealer" and buy "a whole lot" of anything he wants, who chooses a purchase by personal selection, who pays $12 for it and is told by the monitor-clerk (previously instructed) that there is a dealer's discount of 25 per cent. and 5 per cent. for cash, and that he can **get the discount money back** as soon as he figures out how much it is, has no such trouble. Practicing discount problems at the desk for the next few days is **only** practice, **easy** practice to a prompt proficiency, for he **knows** "why is a discount." The principle of ready grasp of each new problem is the same in the lowest grade just starting addition. **Why** must these numerals be added, and why must the "answer" be right, is just as hard for them to understand as all the other "whys" when only a white sheet of paper, a busy teacher and a wandering childish mind can be brought to the work.

In one class a pupil that could not understand the meaning of "like numbers" was given several packages of sugar and asked to subtract a pound of lard and bring it to the teacher.

After a few puzzled moments the little one looked up, with a smile that said as clearly as words, "I've caught you now" and said, "I can't do it. There isn't any lard there."

In the laugh that followed one teacher's bug-a-boo disappeared. That class had no further difficulty with that point which some pupils seem never to grasp by book-arithmetic rules and explanations.

Business Arithmetic

The children should imagine themselves acting as dealers, buying supplies for their own store (or as importers, for duties) when figuring discounts, interest, simple and compound, ratio, proportion, partial payments and all variations from the usual prices of the articles; because the basic idea of domestic economy is being gathered as they work and the real costs of the real goods are worth knowing especially where different sizes of the same article give a direct illustration of the economy of larger purchases, the loss by costs of packing and marketing in smaller sizes.

Areas, volumes, cubic contents, cylindrical contents, denominate numbers, tare; all are easy to demonstrate with these many shaped made-to-fit boxes and cartons. Some are marked with the weights or measures of their usual contents.

A famous educator has supplied the following special syllabus for business arithmetic which he used for years, modifying by experience so its, practical application is tried out.

I. Inventory.
   1. Counting—dozens, etc.
   2. Measuring—length, area, capacity, weight.
   3. Recording.

II. Problems relating to prices and cost.
   1. Value of many, cost of one given.
   2. Value of one, cost of many given.
   3. Raising and lowering of prices.
      a. Simple addition and subtraction.
      b. By fractional part.
      c. By percent.
      d. To allow for profit and expense.

III. Buying and selling.
   1. Making change.
   2. Direct buying and selling.
   3. Buying and selling on credit.
      a. Sales slip.
      b. Checks.
      c. Discount.
      d. Accounts.
      e. Commission.
   4. Ordering from catalog.

IV. Banking.
   1. Depositing.
   2. Checks and withdrawal slips.
   3. Notes and interest.

V. Book keeping.
   1. Simple accounts.
   2. Profit and loss.
   3. Cash account.
   4. Posting.
   5. Insurance, taxes, rent, expense.

Domestic Economy, Object Drawing and Color Drawing

These classes are provided with so wide a range of directly useful material that special instructions seem unnecessary excepting to give the prices of the goods for arithmetic and Domestic Economy which are supplied.

You will find simple and complex designs on the cartons, the boxes, the posters, and the signs. These are the work of the foremost commercial designers and illustrate clearness, art, balance, proportion etc., of a high order.

Home Work

Home work with the cartons should be encouraged, the scholars being allowed to carry home the object to be

measured, or drawn, returning the box with the lesson sheet, for restoration to the store.

Home work compositions describing the goods which these boxes should contain at a real store (here also giving the boxes to be taken home, looked over for the purpose and returned with the compositions), start the scholars on an eager personal investigation which insures compositions representing their real ability. It is the best of tests. The Information Stories which are furnished by the publishers are a great assistance in this work.

General Suggestions

Use the store mainly to demonstrate the underlying principle of each new step in study. Class practice afterward is no different, but being better understood it is more quickly done, and class progress is rapid. After the first few lessons you will save time in class work. The real time saving is, however, **the progress of the class** in both speed and efficiency.

Any materials "left over" keep available for replacement of damage. Keep at least **part of every package** received on view in the store—it will be needed sooner or later. Great pains is taked to send no useless material.

Some schools are so large they really need two complete outfits in one store, or two complete stores. The publishers will be glad to supply them. But please mention the fact that a **duplicate outfit** is wanted to save confusion in sorting the records of the thousands of schools that use the "store." Also please give **complete** addresses, including **street numbers** of school building if possible. Sometimes the ungraded class needs a separate Model-Store because they use it all the time. Just ask for it.

In many classes the scholars write out an "order" for the goods they want to buy (a mere list in some grades), while the salesmen and clerk are getting the teacher's instructions for the day. They can then buy swiftly. Those that finish their resulting examples first, write "compositions" about what has been done, or practice other applications of the same problem (placed on the board by the teacher while the pupils were busy buying their goods). Thus no one is idle for even a moment.

Imaginary show window or shelf displays may be piled in conical or triangular form or in rectangular or oblong stacks accompanied by the actual piling of the boxes if desired and demonstrating right-triangles, surface area, cubic contents and a wide variety of details.

It is manifest that in stacking tall piles of small boxes several may be set as a base and a cone stack formed without affecting the arithmetical factor of the direct height and the number of boxes (or inches or centimeters) involved. As a rule these stacks can be arranged on the chalk rim of the blackboard and the boxes leaned against the board so that the demonstration of the example can be very rapidly set up. A ruler may support the packets forming the hypotenuse of a right triangle, when demonstrating with boxes.

Illustrate proportion by giving the

cost and selling price of one article, the cost of another and asking for proportionate selling price of that article thus: We have corn flakes that cost us 8c and we sell for 10c; now we have bought some cocoa at 20c; for how much must we sell it to make the same rate of profit? Have the salesman set out boxes to visualize the example and focus the attention.

Don't be **too conscientious.** Many teachers have worried for fear the equipment would be lost or damaged and took a lot of trouble—and it was trouble—to protect it.

Damage and loss must come. Better that it should come to the store than to the time of the teacher. Replacements were arranged in advance and the only fear is that teachers will hesitate to send for them. Keep every kind of equipment up to a useful strength, so that all drills can be fully applied at once. If there isn't enough of any article to serve all plans send for more.

Use the signs to show where the things belong, so anyone could put the store in order easily. One school thought the signs were "only ads" and threw them away. It's a bare looking store without them, and an almost prohibitive waste of time to return the goods properly to a signless store after each lesson. If the signs have been lost don't hesitate to send for more. More signs are sent than are really needed, but if soiled or torn, use the extra ones to replace them and keep a fresh looking outfit, an exhibit of neatness for its moral effect.

After a lesson or so at the store you will find the class ready for the serious work **more promptly** than if you had written the same lesson on the board and waited for the class to copy it; with this essential difference—**they are keen to figure out their purchases**—while indifferent to the lesson on the board, often averse to it.

Don't use the store too often. Keep its novelty fresh. A schedule for the different classes should be arranged to avoid interfering with each other's work.

It will take no more time to **plan** what you tell them to buy at the store, than to plan the same lesson in the ordinary way. It will take **less** time to direct them than to write it out.

A practical writing lesson: **Copy price list** at the store so each pupil can have a copy. Mount on cards or paste into the arithmetic. This price list will be found very useful to let pupils **make their own problems** for home work as well as solve them at home, a practice rapidly growing in all schools.

The articles of commerce shown in the store provide excellent composition subjects. Their country of origin, their raw states, their transportation, transformation through various processes, etc. Educational articles of such character are supplied.

The value of the "store" for review work is exceptional, promoting rapidity due to the pupils' initiative. The way to use it will be perfectly plain to the teacher after the various drills have been performed.

In the words of the originator of the method—

"The fact that each scholar may have an individual and near view of the object is a feature of great importance. He can handle it, and bring the sense of touch to help that of sight * * * and is not hindered by, and does not hinder scholars who work at different speeds. * * * A can or jar to handle to measure, will tax the ingenuity of the child to the full to ascertain all the dimensions necessary * * *. The relation between the available volume and the avoirdupois or capacity of the contents, with a little practice will be readily appreciated, and the ability to form approximations in pints or pounds forms a valuable asset to any child."

It is easy for a teacher to fall into the error of thinking that the acts of buying and selling are the **object** of having the store. They are only the **means** to the real end. True, up to about 6th grade much of the real mathematics teaching is automatically demonstrated by usual store customs.

These uses are so varied and so obvious that they are not included in the drills, but place will be made for them in the next volume and teachers are invited to send such lessons to the publishers.

But the school store is most useful as a bait to tempt the pupils to eagerly follow the demonstrations of principles which the teacher prepares so she can more easily and quickly fix in their minds the foundations for later class practice and drill.

Keep this in mind. All the work at the store and planning the store lessons, should take the place (and the time) of work that must be done anyhow, usually at greater effort. It may seem a bit harder at first, but if you are not **saving time** and trouble after you get it working, there's something wrong—write for help.

Caution

Materials supplied through this department are carefully chosen for the purpose and come from patrons who have agreed to act in strict accordance with the rules of school authorites.

Occasionally outsiders have offered materials and some have so acted as to give offense, causing difficulties to the schools that accepted these materials. If such are offered write us at once.

Principals and teachers are asked to remember that we are responsible only for the goods that bear our shipping label which is provided for the guidance and protection of those using our method.

We will order extra equipment for schools whenever we are advised of the need. If your school building requires more than one store equipment, whether for different parts of the building or to make a larger store, do not hesitate to ask for it.

Model-Store-Keeping Department.

Notes

PART TWO

DRILLS

Use the margins for notes and additional lesson plans. Make notes on a pad during class work, digest same and enter in this book for the guidance of all teachers using the book, or for forwarding to the publishers.

Notes

Drills. I to VIII

Taking Inventories

One of the most practical lessons at the school store consists in making inventories of the stock on hand.

The character of the inventory varies with the grade.

The following suggestions elaborate the idea by steps so each teacher can use as many of the steps as the advancement of the pupils permits:

Step I

About 3d year or even younger pupils.

Allot to each pupil one kind of stock to count. If the store is not yet set up for the season this may be done in preparation for placing the goods on the tables or shelves.

Report the count to the "clerk" (or teacher) to be placed on the blackboard, and marked with initials or the name of the pupil reporting.

A second set of pupils counts the

same groups of boxes and reports to the clerk. Each count is placed adjoining the previous corresponding count on the blackboard.

Continue until the whole class has counted.

Blackboard review reveals errors and who made them.

Demonstrates necessity for accuracy in counting.

Step II

Pupils act in pairs, checking each other's count before reporting.

Reports and review as before. Ask how many boxes are on hand and demonstrate **addition** as the means to find out easily.

Step III

Again acting in pairs, one calls off the count, piece by piece, partner keeps tally, four marks down and one across. In business practice each group of five is called a "gate." Tallies on paper (or on blackboard). Tallies translated into figures (both addition and subtraction may be used. Thus: five "gates" and two tallies over equal 27. Or, since the sixth "gate" is started but not completed, six "gates" less three tallies equal 27). Transfer to board. All tallies compared to board, errors corrected.

Step IV

Simple stock sheet.

Articles tallied by name. Total stock shown. Assume 20 boxes of each kind on hand. How many over? How many missing? Demonstrate practical use of addition and subtraction.

Step V

Values of stock.

Articles grouped by names, tallies to show number of each on hand, **multiply** by price of each, carry out values into column, on paper or blackboard, add values; result, retail value of stock on hand.

Divide entire class into a few groups, in each group two count (reporting alternately) the others make out the stock sheets, as the reports are called off.

Step VI

Write stock sheets to show condition of packets, i. e., biscuits. 10 perfect boxes, 5 soiled, 2 damaged, 2 worthless condition (1 missing).

Step VII

Write stock sheets as in Step VI, elaborating by having pupils estimate the value of such a checking as above using their own judgment. One pupil may produce the above illustration as

Biscuit; 10 perfect, present value		15c - -	$1.50
5 soiled	"	12c - -	.60
2 damaged	"	4c - -	.08
2 worthless	"	—	
1 missing	"	—	
	stock value - - - - -		$2.18

The next pupil may place such different values on the same items as to indicate a very different stock value, more or less than the $2.18. (It is clear that originally there must have been 20 packets worth 15c each or $3.00).

"Since the estimates vary a good deal, let's see who would lose money by putting too low a value on our

stock, and who is holding it too high, so it wouldn't sell fast." Have the varying estimates averaged (need for **division** illustrated), and declare this average to be the real value of the stock on hand. The pupils who estimated the nearest to this average may be rewarded in various ways. So pupils will grasp the relations of their various estimates, have them find what fraction of the average each low estimate represents, and what fraction over 1 each high estimate represents. The whole class may figure each in turn or each scholar his own only, as desired. This provides division and fraction (or decimal) exercises in wide variety; and, since the pupils produce the problems, their interest in solving them is keen. One of the simplest illustrations of fractions may be made with the tally "gates," thus: seven articles are tallied as one "gate" and—visibly—2/5 of a "gate."

Step VIII

Knowing the number of articles on hand, (or assuming a fixed number) allot cost prices, lower than retail prices, figure profit and loss on the stock sheet. Abstracting articles or merely calling them missing, or considering goods as sold but not paid for and uncollectible, etc., produce "losses." Losses may be met by giving notes, which may be discounted, and most of the features of business arithmetic may be introduced at the teacher's discretion. The action may extend over several lessons, one or two a week.

By permitting individual judgment of present values the resulting averag-

ing of the different sheets with reward or glory for those nearest the average develops a remarkable interest, a contest factor greatly promoting clearer understanding of the principles and uses of arithmetic.

Such inventories as have been outlined, varying in detail, may to advantage, be made many times during the term.

We cannot too strongly urge the practical value of this work both for educational effectiveness and for the physical maintenance of your equipment.

Graded Drills

FIRST YEAR—FIRST HALF

Drill 1

Counting

ASSUMING that counting by ones to one hundred has been taught in the kindergarten, review is the main object of these exercises.

The class is marched to the Model-Store, or its units are brought to the classroom by monitors.

Teacher: "How many of you have ever been sent to a store by your mother?" (hands.)

"How many have gone to a store and seen people buy the things they need?" (hands.)

"Tell me some of the things you saw bought at the store."

(Call on a number of children to tell what was purchased.)

"How many things do you remember, Mary?"

"How many things do you recall, John?"

(Ask a number of pupils to tell these things.)

Teacher: "Would you like to go to the grocery store this morning to get some things for me? Here is our grocery store."

"Class stand. March to the store in single file and each one choose and take with you one package. Return and place it on your desk."

"How many packages have you, Tom?"

"I have one package."

"How many packages have you, Mary?"

"I have one package," etc.

(Question entire number of pupils or a part as desired.) (Now call on some other pupil.)

"James, count the packages on all the desks."

(Counts by ones and as he counts pupils lift packages from desks or touch them with finger or pointer, or the pupil counting may run quickly and touch each package with pointer. Have a number of pupils run and count the packages, working quickly and quietly.)

Pupil at head of each aisle walk down the aisle and count out loud—next pupil follow, etc.

Monitors replace packages, or class returns them marching as before, counting in unison aloud as each is deposited at the store.

Drill 2

Counting

Teacher: "How many of you remember going to our store for me, the other day?"

"What did you get for me, John?"

"I got (corn flakes) Miss Jones."

"How many packages did we get, Mary?"

"We got (20) packages."

"Count by ones to twenty, James." (counts.)

"Count by ones to twenty, Susan." (counts.)

Several pupils called on individually and then class counts together by ones to one hundred.

Teacher: "Would you like to get some things from the store this morning? What would you like to get, Jack?"

"I should like to get some chocolate."

(If possible, call on children not called on before.)

"Go to the store, each one get *two* packages. Return and place them on your desks."

(If preferred, they may be placed on window ledges or in the chalk rack in a row to make them easier to count.)

"Harold, take the pointer and count quickly how many packages we have this morning."

(Several children count individually using the same exercise as in the first lesson and then pupils count in unison.)

Pupils may form in line and pass packages one at a time toward the store, counting as they handle each

one, or Monitors may return packages.

Variations

a. The packages may be passed to desks in same way, at the beginning of lessons, or monitors may take an armful of boxes, serve the class and count aloud as they deliver each one. This keeps the whole class listening, watching, interested.

b. Repeat these lessons until there are one hundred objects on the desks and the children count to one hundred easily and quickly. They may bring three or four objects each from the store so as to make up the desired number.

c. To vary the lessons, one child may count to twenty, then another child take the pointer and continue counting to sixty, another counting to eighty, etc.

Count the boxes back to the store by marching or by passing from hand to hand, with one monitor for the end of each row of desks, placing boxes on shelves.

Drill 3

Writing Numerals

In teaching pupils to read and write numbers the following is an interesting drill:

Teacher: "Let's play with the store today."

Appoint monitors to pass out packages and have pupils get from the store the desired (predetermined) number of packages.

Teacher: "How many packages have you, John?"

"I have four (or other number) packages."

"How many have you, Mary?"

"I have four," etc.

Teacher writes on board the figure 4 and says, "This is the figure 4." All look attentively.

Teacher: "What is this figure, James?"

"What is this figure, Mary?"

"What is this figure, class?"

"Would you like to make this figure on paper?"

"Make ten fours on your paper."

(Drill in counting. Mistakes will be made in writing the correct number. Teacher will walk about finding errors and correcting them.)

Teacher: "Now children, let us play a different game with our store this morning. Let us choose some one to be store keeper."

"Harry, would you like to be store keeper this morning?"

"I will tell some of my pupils who are sitting in the best order what I want them to get this morning."

Teacher whispers to John, "Get me five cakes of soap."

To Mary:—"Get me three boxes

of talcum powder." To Susan:— "Get me four cans of milk." To Charles: "Get me six boxes of cough drops."

Have these things grouped on window ledge or shelf or some place high enough so that every member of the class can see and count them without dodging about.

Teacher: "Each count silently. As soon as you have counted all the objects we have, please stand."

Give pupils a few minutes then call on different ones to state the number. Teacher states the correct answer.

Pupils seated. Monitors return boxes, working quickly and quietly.

Drill 4

To memorize any of the forty-five combinations in addition the sum of which does not exceed nine.

Only the first twenty are usually taught in this grade.

Teacher assembles a few packages on one side of her desk or anywhere in plain sight of all the children, volunteer monitors, or monitors appointed on a merit system, as a reward can bring them; or it may be done by a marching and counting drill as in drills 2 or 3.

Make as much "play" as possible to centre their interest in the proceedings.

Teacher asks children to count in concert the packages as she points to them.

Teacher (or an appointed monitor under direction) takes one package from the group and places it by itself. (Sometimes select the slower pupils for such service. It helps them to gain self confidence.)

Teacher: Holding up one package asks, "How many packages have I, Harry?"

"You have one package."

Teacher places the figure 1 on board.

Teacher takes another package and holds it up.

"How many have I here, Children."

"You have one package."

Teacher places another figure 1 underneath the first on the board: $\frac{1}{1}$ and puts the package by the side of the other.

(Some teachers prefer giving advance directions to a pupil and letting this monitor do the writing. Later the whole class can be at the board

for the corresponding exercise, each writing his own figures.)

Teacher holds up two packages, one in each hand.

Teacher: "Then one package and one package are how many packages?"

"One package and one package are two packages."

Teacher draws a line under the "ones" on the board and writes the figure "two" beneath. Repeats, "One and one are two."

Teacher selects two cans or boxes from store, holds them up one in each hand and says "One can and one can are two cans." Requires class to repeat this. Selects pairs of other things from the store and has the class repeat in each case. Then returns to board; drills abstractly using the words "one and one are two" until the class is familiar with this first combination.

(Even at this early stage it is advisable to exhibit like articles for addition. See last paragraph page 7)

Two boxes may be handed to the pupil at the first desk, one at a time, having pupil say as they are received, "One—and one, are two." This pupil then passes the boxes to the next desk in the same manner. All pupils at desks may be carrying on this play at the same time.

Assuming that two packages of corn flakes are in a group by themselves, teacher selects one other package from a different group and holds it up.

Teacher: "How many packages, James?"

"One package."

Teacher places this package with the other two, leaving space between thus—xx x.

Class observes.

Teacher, pointing to each group successively:

"Then two boxes and one box make how many boxes."

Teacher places this combination on board. Class drill as before.

Similar drills should be repeated through the twenty combinations.

Use this as an illustration lesson, in the early stages of combination work. Continued use might lead to an idea that addition is only counting.

Suggestive review lesson on the combinations

Assuming the twenty combinations are placed on board in sight of all pupils.

Teacher points to any group such as four and three.

Teacher: "Get me some boxes, John, and place them in groups. What kind do you prefer?" (Let the personal choice arouse the interest.)

John makes his selection and places them—xxxx xxx.

Teacher: "What kind do you want, Mary?" Await answer.

"Very well, get me some baking powder, Mary." Points to five and two.

Mary does so and places them—xxxxx xx—etc., etc.

The children may then call off the combinations rapidly from the groups placed.

Note: Obviously a few words from the teacher will turn this practice into an illustration of subtraction by the Austrian method, when this drill is used in higher grades.

FIRST YEAR—SECOND HALF

Continue such drills as number 4 for the other twenty-five combinations during the second half of the first year.

Counting by twos

(Many devices for placing the material before class can be arranged, such as placing a board on the backs of two chairs, covering it with paper secured with drawing pins.)

Having learned the twenty combinations, pupils have some knowledge of adding.

Drill 5

Counting by 2's

Teacher: "Children, we have learned to count by ones, let us try to count by twos this morning."

"Let us arrange a counter in our store."

"What shall we have on our counter Mary?"

"We shall have baking powder on our counter."

(Seek to develop self-confidence in speaking and the correct use of language during all these conversations.)

Teacher: "John, please place two cans of baking powder on the counter, quickly."

"Place two more cans, James."

"How many cans of baking powder have we now, Susan?"

"We have four cans of baking powder now."

Teacher: "Two and two make how many, Jack?"

"Two and two make four."

"Place two more cans, Jennie."

"How many cans have we now, Mary?"

"We have six cans now."

Teacher counts as she points to groups—two—four—six. Asks class to repeat as she points—two—four—six. Calls on several pupils individually to count—two—four—six.

Teacher: "Place two more cans, Harry."

"How many cans have we now, Jane?"

"We have eight cans, now."

Teacher counts again, pointing to each group as before;—two—four—six—eight; and asks class to repeat with her—two—four—six—eight. Repeat this process carrying the counting to twelve during the first lesson. Much drill is needed on this.

Teacher may vary the work by having different pupils come to the front and use the pointer. The more pupils that can have something to *do* in connection with the work, the keener the interest and the stronger the impressions on their memories.

Drill 5 extended

For use on later days.

Teacher: "Do you remember how to count by twos — Let us see."

Teacher: "What are we to do this morning, James?"

"We are to count by twos."

"What are we to do this morning, class?"

"We are to count by twos."

Teacher: "Would you like to see the figures on the board?"

(Teacher appoints a bright board-monitor, or personally places on

board, with spaces between, 2 4 6 8 10 12.) Later during this lesson, these figures can be placed on paper by the pupils.

Continue this plan to teach counting by twos to one hundred.

To save time and to avoid handling an excessive number of packages, the teacher may say, "we counted to thirty yesterday, class. Let us begin with thirty today."

Drill 6

Counting by fives

Same plan as drill 5, used for twos, can be used for fives or the following plan may be employed as a variation.

Teacher: "Children, we have counted by twos. We can count by other number groups also. Let us, this morning, count by fives. Do you think you can?"

Teacher: "What shall we put on our counter this morning, Charles?"

"What do you want, William?"

(If desired let the class vote on the articles to be employed, and count the vote by monitors counting hands. This arouses interest and inculcates the American idea of majority-rule.)

Teacher: "First row stand, go to the store, and each get five cakes of soap. Place them on the counter." (Teacher sees that they are arranged in groups of five, but lets the pupils move the packages.)

Teacher: "Count to yourselves the number of cakes in this group, class."

(Class counts silently.)

"How many, class?"

"Five."

(Teacher puts number on the board thus:—5.)

Teacher: "Count the first two groups, class."

"How many are there, John?"

"There are ten cakes of soap."

(Teacher or board-monitor places the number 10 on the board leaving a small space between that number and the five before it, placed thus:—5 10.)

Teacher: "Now who can tell me how many cakes are in the first three groups? Count very carefully."

(Calls for hands.)

"How many, Harry? How many, Susan? How many, class?"

Teacher places number 15 on the board after the 10, thus 5 10 15.

Teacher points to each group successively, and says five—ten—fifteen. Asks class to count with her five—ten—fifteen, asks individual pupils to count five—ten—fifteen.

Proceed in this manner to 25 for the first lesson, in each instance placing figures on the board at each step.

Teacher counts by fives to twenty-five, and asks class to count in concert and members to count individually.

Continue this plan teaching fives to one hundred. Much drill and review is necessary in all this work.

Variation Practice and Counting by tens

Not much Store work should be attempted in counting by tens as it makes many packages to handle. The following plan may be used as an object lesson:

Appoint one pupil as storekeeper. Make the selection an honor. Have three pupils go to the store and get ten small articles each. Place them in groups on the counter. Proceed as in counting by fives. It is sometimes possible to have part of the class record the spoken counting of those at the store on the boards, and let the rest move to seats opposite the boards and act as critics, watching for errors, changing places with the board operators at intervals.

Since the packages are few in number and not moved far from the

store shelves, their return is not part of the drill, the pupils handling them setting them in place at the close of the drill.

Notes

SECOND YEAR—FIRST HALF

Continue drill in use of forty-five combinations in addition, as in preceding drills, also reversed for subtraction practice.

Series work in addition may be illustrated by similar plays counting to fifty by 2's beginning at 0 and beginning at 1: count to 50 by 3's, beginning at 0—at 1 and at 2; also by 4's from 0—1—2 and 3.

Subtraction (Austrian method). Employ the plan of drill 3 or of drill 4 "counting backwards" in effect.

Adding Columns. Sum Not to Exceed Nine

Not much should be done with the store in connection with this as the purpose of column adding is to instill rapidity in using *figures*, not objects.

Drill 7

Adding Columns

The following game can be given with the object of training pupils' minds in concentration and memorization.

Teacher writes columns of figures on board as:

3	3	3	4	2
2	2	3	3	3
1	2	2	1	2
			1	1

and says, "The storekeeper made a list of the things he sold. The first column is baking powder, the second column is cocoa, the third soap," etc.,

writing b. p., c., s., etc., above each column as she speaks.

William bought 3 cans, (pointing to first figure) John bought 2 cans, (pointing to the figure below) Harry 1—How much baking powder did the storekeeper sell?

Places pointer under first column instructing children to add silently. Erases and calls for hands. Quickly commands, "stack up this number of baking powder cans, Harry." Harry runs for packages, places them on counter. Children at signal from teacher give answer. If number of packages is correct, as a reward, teacher places on the board the name of pupil who brought the correct number of packages. Teacher proceeds quickly with other columns.

SECOND YEAR—SECOND HALF

Drill 8

Subtraction, Austrian Method

Combined with former method of teaching subtraction.

Teacher places examples on board as follows:

9 8 9 7 8 9
1 2 2 3 3 3
– – – – – –

Teacher points to 1 (under 9).

Teacher: "Get me one box, Mary. Choose the one you like best."

Mary places it on teacher's desk.

Teacher points to 9 (above 1).

"Get me enough more of the same boxes to make 9, John."

John gets 8 (knows this from the combinations) and places them in a group near the others.

Teacher: pointing: "How many, class?"

"Eight."

Teacher places 8 under example and repeats:

"One and what make 9, class?"

"One and eight make nine."

Teacher places objects in one group.

"How many have I, class?"

"You have 9."

Teacher points to nine quickly. Takes away one from group.

"How many have I left, class?"

"You have 8 left."

"Then 1 from 9 leaves how many?"

"1 from 9 leaves 8."

Teacher: "All in this (one) row of desks, march to the store. Each select the thing you want, and get 12 boxes of that kind. Return to desks with boxes." All the above examples can be demonstrated with twelve boxes.

(At the close of each example, pupils pass boxes to adjoining desks until the boxes have traveled across all rows and all pupils have had visual practice.)

Drill on this with individual pupils and with class.

Continue same process with other examples.

Drill 9

Multiplication Tables

To show that multiplication is simply a quick and easy way of adding.

This lesson may be adapted to any one of the tables.

Teacher sends class to store by rows. Each pupil to get specified number of boxes, six for the six times table, etc., and place them on his own desk. Teacher passes among the desks, points to three pupils, and says:

"How many boxes have you three children all put together? Get together, count up, and find out." Next four and next five pupils, gather together and count up.

(This gets them into groups, playing, correcting each other's mistakes.)

Teacher: "How many have you six children?"

"How many have you eight?"

"How many have you two?"

"How many have you five?"

Teacher forms as many groups as she thinks advisable: then goes back to the first group of three children and says:

"How many did you count?"

"Eighteen."

"Then eighteen is three sixes or three times six or six times three. Now if you will remember that, you will never have to bother to count up again."

"Let us remember how many three sixes are." (Drills on this for some time with individual pupils and with class as a unit before passing on to the next group that she appointed.)

At this point call their attention

again to how long it takes to "count up" and how easy it is to remember that 3 sixes are 18. "It saves trouble all your life to *remember* these products, so they have been made into tables, called the multiplication tables so you can easily learn them and *save time* all your life long."

Take up each combination in the same way, always impressing the fact that *memorizing saves trouble.* Pupils will be found much more willing to struggle with the tables after much labor of counting up, while the very act of counting has itself fixed the figures involved in their minds. Returning boxes to shelves, order one pupil from each group to carry back all the boxes that group had, reporting at the store. "Three of us had six boxes each. Three sixes are eighteen. I am returning eighteen boxes," etc., etc.

Drill 10

First Step in Division Correlating with Multiplication.

Teacher appoints a salesman and calls for six (or other number) volunteer "purchasers" who each select 4 (?) boxes all of one kind, from the stock in the store.

Teacher: "Mr. Salesman have you 24 boxes of one kind? Put them out for Sale."

Teacher: (to purchaser) "Please buy all of those boxes and divide them equally among you. Now be fair, don't let anyone get more than his share." (Thus appealing to a natural tendency of children at play.)

"How many have you together?

"24."

"How many have each?"

"4."

"How many children have four?"

"6."

"Then how many fours have we?"

"Six fours."

"Then (24) boxes divided by (six) gives how many for each?"

Teacher questions and drills.

Teacher continues throughout (*six*) table using above process.

Teacher also may at the same time review multiplication drills.

Example:

Six fours are twenty-four.

Six sixes are thirty-six, etc.

Return boxes to shelves as in any previous drill, practicing multiplication, addition or subtraction.

Drill 11

Addition with Money

Simple use of money for drill in addition, subtraction and multiplication. To be used in second and third grades. The printed paper money forms used in the bookkeeping classes could be used here to great advantage. These could be easily obtained from the commercial department. Most schools will find toy money on their requisition lists. If not send to *Educational Foundations*, Model-Store-Keeping Department, for a supply. Many teachers use real money, and get it back by requiring all practice to be checked up and correct before close of lesson so that every cent is counted.

Supply each pupil with several one cent, five cent, and ten cent pieces. (Envelopes will serve as purses.)

Teacher: "We are going to play store today. Who wants to be a salesman?" Select salesmen by vote of class, by teacher's preference, or by class standing (merit system) or because of specific interest in the work. Make as much "play" of this selection as necessary to awaken the interest of all.

Teacher: "First row go to the store and each buy one package of a 10-cent article, and one at five cents. Take exactly the money you need. Carry purchases to your desks. (Watch the buying for errors. Make sure there are enough salesmen to avoid delays or crowding). At end of selling:—

Teacher: "How much money did you spend, Jack?"

"Fifteen cents."

"How much did you spend, Mary?"

"Fifteen cents."

If mistakes are made, teacher places the combination on board and drills rapidly.

Teacher may quickly send other students with different combinations of money, for further drill.

Subtraction (with money)

Teacher: "Next row take (ten) cents each to the store and each buy one box that costs (five) cents. Return with your change."

"How much change have you left, Mary?"

"Five cents."

"How much change, Walter?"

"Five cents."

If mistakes are made anywhere, drill on correct combinations with figures placed on board.

Continue this drill through subtraction combinations.

Multiplication (with money)

Note: The teacher may use the group formation in upper grades to produce 5x5x5, etc., or may ignore the third item of that problem for lower grades.

Appoint salesman in any preferred way.

Teacher:—"These five pupils each buy five articles at five cents each."

"These four pupils buy seven things at five cents each." Or direct them to spend 35c on 5c articles.

"These three pupils buy four boxes at five cents each."

(Let pupils choose the pieces of money they wish to take as there is no

change desired here.) (This is also good rapid drill in addition.)

Teacher questions members of the first group:

"How much did you pay?"

"Twenty five cents."

To second group:

"How much did you pay?"

"Thirty five cents."

To third group:

"How much did you pay?"

"Twenty cents."

Teachers may continue this drill as deemed advisable.

THIRD YEAR—FIRST HALF

Drill 12

Short Division

Use preceding drills as required with increased numbers.

Short Division. "To give thorough and systematic oral drill as a preparation, before asking a child to use 2 as a divisor, he should be able to tell instantly how many times, with remainder, 2 is contained in every number to 20" (From New York State Syllabus.) Drill 12 is to accomplish this quickly and easily.

Appoint salesman as usual.

Teacher: "Each buy 10 boxes at the store today." (Or have one salesman and one purchaser, others at blackboard, the rest as "critics" as described at end of Drill 6.)

(This produces rapid-drill in multiplication, calling out the purchases as fast as made; use of money is slower but sometimes better, use own judgment according to the progress of the class.)

Teacher: "Set aside 3 boxes and use the remaining boxes."

"How many will you use—(7)?"

"Place these seven in groups of two on the desks and if you have any left over, set it aside."

Teacher questions class:

"How many twos have we?"

"Three twos."

"How many boxes over?"

"One box."

"Then there are how many twos in seven?"

"There are three twos in seven."

"How many over?"

"One over."

Teacher: "Now take ten packages," (group in twos, and drill as before.)

Teacher: "Now each of you take a partner and combine your boxes."

"How many have each pair of partners?" —20.

"Set aside 5."

"How many have you?"—15.

Use 15 packages, group in twos and drill as before.

Group for 17, for 12, for 14.

Pupils should be thoroughly drilled in above operations before attempting any such example as the following:

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In returning boxes to shelves, handle them by pairs, counting total twos used by whole class, or received by each salesman if there are more than one, etc. A variety of ways of making practical use of the return and hastening its progress thereby will occur to every teacher.

Drill 13

Practice in measuring

(Supposing inch and foot have been taught by the use of the rules.)

Get *Rectangular* boxes into the hands of the pupils by means of any preceding drill in purchasing, using the play as rapid-drill in past work. Specify that they shall purchase only rectangular boxes in first lesson, (later they may use round boxes and measure circumference by strips of paper and flat rules.)

If preferred, delay store practice and begin as follows:

Teacher: "How many of you remember how long an inch is? Draw one on your paper. Now measure it with your ruler and see how near right you are."

"How near to an inch is the second joint of your index finger? Measure it."

"Mentally pick out a box in the store."

"Write down its name."

"Write on your paper the number of inches you think it measures, the longest way."

(Teacher then has each pupil supplied by monitors with the box called for, or marches class by the store to pick out or purchase their boxes.)

Teacher: "Now take your ruler and measure the box and see exactly how long it is. Put this number on the paper by the side of your other number."

Teacher: "How many had it right at first?" (Probably not any.)

"How many had it nearly right? John, how many inches did you guess and put down at first? How

many did you find it to be when you really measured? Mary how many inches did you guess and put down?"

"How many did you find it to be when you measured?"

Teacher: "Let us see if we can tell how wide the box is?" etc., at this point square or surface measure may be referred to to advantage. Some syllabi require it at this stage.

Proceed until the box has been measured as to length, width and thickness. Students may exchange boxes (a few moments of relaxation) and thus have a different box to measure and a renewed interest in the work if the lesson period is long enough.

Drill 14

Combination drill in measurements and division

Teacher: "Let us use our own desks as counters this morning."

"First measure your desk to see how wide it is in inches."

"We will now each choose several packages that are of one kind that we would like to sell."

"Choose any kind you wish, but get all of the same size."

"Now go to the store, this row first, and measure the width of the boxes you wish to put on your counter. Take as many packages of this article as you think you will need to make one row across your desk. Place them close together along the back edge of your desk. Then sit in position."

(Send the rows as rapidly as possible without confusion. If class is large, two or more pupils may use one set of boxes on one desk. Teacher passes down the aisle choosing different pupils and asking,)

"How wide is your desk, James?"

"How wide is yours, Mary?"

Make sure by such questioning that all the pupils have the correct width of the desk. (Suppose it is 27 inches.)

"How wide were your packages, Jack?"

"How many did you put on your desk?"

"Did you have any space left over?"

"How many inches did you have left over?"

"Then how many (sixes?) in twenty seven?"

Continue this drill, exchanging boxes, to review the division tables.

Drill 15

Lessons in fractions

This drill can easily be elaborated for first demonstration of *cancellation.*

"Let each write on paper one thing which you would like to buy this morning." (All write.)

"John, what did you write?" (Suppose he wrote corn flakes.)

"How many wrote corn flakes?" (count hands.)

Ask someone who did not raise his hand what he wrote, then ask how many wrote that article. Hands. Send a representative of the largest group first, to buy the article that most of the children have chosen; second, the choice of the next group and third, the article chosen by the third group. Carry out purchasing as oral practice. Try to use the diffident ones and teach them to speak aloud freely.

Teacher: "John, you have bought two boxes of corn flakes. Mary, bought three of baking powder. Jane, bought four of chocolate."

"Place them in groups, (on teacher's desk, store counter, chalk rails or elsewhere in plain view) and stand beside them."

Teacher: "How many in the first group, class?"—"Two."

Teacher places 2 as a denominator on blackboard as follows: $/_2$

"How many in the second group, class?"—"Three."

Place 3 as denominator as before $/_3$

"How many in the third group, class?"—"Four."

Place the four as a denominator $/_4$

"Mary, hold up the two packages one in each hand."

"How many in this purchase, class?"

"How many in her right hand?"

"What part of her purchase is that?" Try to get the answer. If not give it.

One is one-half of her purchase."

"We write one-half like this." Place 1 over the two already written on the board: producing ½.

"How many packages has Mary in her left hand, class?"—"One."

"What part of her purchase is that?"—"Half."

"How many halves in her purchase?" "Two."

"Are there always two halves in any one thing?" etc.

Using this same plan, develop ¼, ½, ¾, ⅓, ⅔ from the purchase of the three articles and the four articles.

Return purchases to store-keeper ½, ¼ etc., at a time.

Drill 16

Drill in reading and writing United States Money

(It is common practice to teach the writing of U. S. money without necessarily identifying the cents as decimal fractions; but the same drill can be used for both purposes, by a slight difference in the questions asked by the teacher. Toy money should be distributed in envelopes, previously sorted by volunteer monitors out of school.)

Teacher: "Children, how many of you have ever been on a camping party?" (Any outing, local picnic or other expected event of interest can be mentioned to advantage.)

"If we were going to camp today, what things in our store would you like to take. Each of you think of something."

"First row take your money, go to the store and buy the article or articles you thought of."

"Second row take money, go to the store and buy the article you thought of." (Until entire class has purchased something.)

"John, stand and tell me what you bought and how much you spent." (For drill in English.)

"I bought 7 packages of (———) at ten cents per package. I spent 70 cents."

Teacher: "In order that we may know what all the things cost us for the camp, let us write down the amounts as they are given." (Using the period and dollar sign.)

"Let us write them in columns, each row separately."

"Class write seventy cents."

Teacher proceeds in like manner through the first row, instructs them to draw line and add first column quickly. Tells them to stand when they have added it. When all the class is standing find correct answer by questioning, place it on board, writing and explaining dollar-sign and decimal point.

Proceed in like manner through the entire number of rows. Then have the class add the sums of the different columns. This will be the cost of all the things they have chosen to take to the camp.

Drill suggestions for balance of third year

Multiplication tables, 10's, 11's and 12's and their use as divisors in short division may be practiced as in previous drills by purchasing at *wholesale*, handling one box of each (or a few boxes or tins) as samples of goods bought in large quantities, say by the hundreds. The teacher should determine the number to be ordered before the lesson at first, to insure easy problems that will help pupils to grasp the principles involved.

Having obtained total cost of purchases by store drill (in multiplication, or addition) divide the class into groups of partners, ten in this, eleven in that and twelve in the other, etc., often changing them about. Use their own names as John Smith & Co., Jones, Robinson & Company to hold their attention.

Ask each partner to determine his own share of the purchase they made, thus dividing by 10, 11, 12.

Handling, counting and dividing packets is the surest means of fixing in pupils' minds the meaning of "prime numbers" and the identity of those up to 23.

Tests for divisibility of numbers by 2, 3, 5, 9 and 10 (short methods) are better understood if the number of boxes representing the sum of the figures are assembled (by any drill in fundamentals) and *handled* by the class, dividing them into groups to see if the division can be made to "come out even" or not. For instance, 17961. Is it divisible by 3? 1 plus 7 plus 9 plus 6 plus 1=24. 3 in 24, 8 times. Yes. Take 24 packets, divide into groups of 3. It comes out even—none over. Ans. affirmative.

Relief from rigidity and silence, permitting conversation during such practice is a help to the pupils and promotes individual expression. By introducing the terms and definitions "factor," "prime factor," also addend, sum, minuend, subtrahend, remainder, multiple and multiplier, product, dividend, divisor and quotient, as previously taught, in these talks, the pupils will be found familiar with the nomenclature of their arithmetic before the teacher realizes it.

In such conversational periods, with the packets to focus attention, linear, and surface measures, measures of volume, etc., can be brought up and made clear with ease, paving the way to learning the tables.

The Roman numerals can be made as interesting as a new story. The

story that the four "I's" for IV on a watch face was an error of Napoleon which he covered up by compelling the watchmakers to perpetuate his mistake can be employed to advantage.

The "get-together" effect of an occasional period of such relaxation work is a wonderful help to the teacher and its value shows up at examinations.

FOURTH YEAR—FIRST HALF

Preceding drills are used with larger numbers and any desired changes of detail in the store "play" that will make the pupils' interest more keen.

The expansion of Roman numerals can be developed (it is usually required at this time) and the common commercial practice of using a crossed "M" for "thousand" can be practiced by purchasing at wholesale by thousands freely.

Omitting money, and holding "limit-sales,—everything at half price for five minutes" and auctions, provide rapid drill in fundamentals, so important at this period. Don't use the store enough to make the pupils tired of it. If interest flags, drop it for a couple of weeks until they "want to play" again. Their eagerness is the keynote of success in using the Model-Store equipment.

Writing "orders" during language period, to be filled at the "store" during arithmetic period uses the store equipment in its most obvious way, for buying and selling, and provides wide variety of rapid drills in the fundamentals and in U. S. money, writing and reading numbers and expressing dollars and cents on orders and on "sales slips" and simple problems in bills. Drill 15 may be employed for cancellation.

Frequent inventories—See Drills I to VIII—are useful at this period.

Drill 17

Multiplication with whole or mixed numbers

Teacher places model problem on board in front of class as follows:

"How much will—boxes of—cost at—cents per box?"

Teacher: "Each one write on paper a problem like this one you see on the board, but choose for yourselves both the article you wish to buy and how many.

"Write as well as you can for when you finish you are to exchange your example with your next door neighbor."

Teacher should have the transactions actually take place by purchases at first drill. Later have goods delivered by monitors; or simply choose by observation, leaving store undisturbed.

Class proceeds with the work. Pupils exchange papers with others who correct the work, and stand as soon as finished. Class seated as soon as all have finished. Call for those who had example correct to raise their hands. Follow this plan for at least three examples. Have the papers handed in at the close of the lesson, mark and return them to the pupils for further correction.

Note: Many preceding drills can be employed at this time. The obvious uses of the store in buying and selling can be employed freely in many ways.

Drill 18

Addition of fractions

Teacher asks "Who will be storekeeper? We want only one today" (Storekeeper chosen by teacher, by vote or any interesting method.) When chosen, say:

"John, since you are storekeeper this morning, arrange the boxes on your counter in groups, each group to contain five like articles."

"How many in the first group, Class?"

"Five."

Teacher directs storekeeper to hold up one article and asks.

"What fraction of the group is this, class?" Develop answer carefully,

"One-fifth."

"How many *fifths* in the whole group, class?"

"Five "

"Mary, go to the store and buy any part of the first group, but not all."

Mary goes to store and says "Good morning, will you please sell me (three?) of these"—(naming article). (Develop appropriate and courteous conversation.)

"Next—James, go to the store and buy all that John has left of the first group." (In similar formal play John buys [two?]—all that are left.)

Teacher: "How many *fifths* did Mary buy, class?" Teacher puts the number on board when given, viz. $\frac{3}{5}$.

Teacher: "How many fifths did John buy, class?" Teacher puts this number after the other and says:

"Three-fifths and two-fifths are how many fifths, class?"

"Five-fifths."

"Then five-fifths is one whole group."

"Let us put the example on our paper, 2/5 plus 3/5=5/5=1."

Direct the next group to be sold to three pupils, develop as above. The next group to be sold to four pupils, etc.

18-B

A Simple drill in Addition, or Subtraction or Reduction of Fractions.

Purchase 36 boxes, (or other number) seeking such as may be offered in cartons holding 1 doz. or ½ doz. etc., each.

A group of cartons is the pupil's *one* order, the *unit*. Each carton is a fraction of the order, each box a subfraction.

Application: Objective handling, counting and grouping of the boxes and cartons.

Reduction Example—In 1 order are 3 cartons. In 3 cartons are 36 boxes.

1 carton is 12/36 or ⅓ of the order.

1 box is 1/36 of the order.

Six boxes are 6/36 or 1/6 of the order.

Drill 19

Addition and subtraction of fractions with reduction of improper fractions to mixed numbers.

Select Store-Keeper as in previous drills. Follow general procedure of Drill 18. Direct storekeeper to array several piles of boxes (say) 7 boxes in each pile in an attractive way. Vary the number for fractions with different denominators.

Salesman now sells to one pupil a fractional part of the first group. To a second pupil a fractional part of the second group, and so on until a part of each of the groups has been sold. Have the pupils who have bought the articles stand, and direct the class to write the number of sevenths the first pupil bought, and so on, making several fractions to add. If the sum comes out an improper fraction it may be changed as follows: 10/7 = 1-3/7.

To illustrate and prove have the purchases placed in one group and ask some other pupil to arrange them in groups of seven. Let him tell how many groups he has and how many packages or sevenths over

For rapid drill.

For this work the monitors may prepare the goods on the counter in groups each group containing a specific number of packets, as determined by the teacher.

Instruct each purchaser to buy only part of the pile and never to take away the entire pile.

If seven is the determined number and there are seven boxes in each pile, as the purchaser-pupils pass the counter each takes any number of

boxes from any one pile that each desires, leaving some in place.

The teacher then questions the salesman as to how many sevenths have been sold and how many sevenths remain, pointing to one pile at a time for each question.

Teacher then questions purchasers as to how many sevenths they have bought, causing them to compare the number they have in their hands with the total number in the original pile. Advanced classes in practice may call off the fractions as the "sales" occur, requiring no questions after sales.

Note: Sometimes two or three will have purchased a packet or two all from the same pile making this lesson very varied. It conducted rapidly it arouses keen interest and causes all the class to pay close attention.

Drill 20

Interchanging a mixed number and an improper fraction

Note: Teacher should determine the number of boxes to be purchased in advance of this lesson.

This practice, obviously, can be worked both ways at the teacher's direction.

Teacher asks, "Who would like to be salesman this morning?"

Appoint one salesman for each row of desks and designate "1st row salesman," 2nd, etc.

Rapid Drill in fundamentals—multiplication.

Buy from the salesman for your row, 5 articles of one kind. Verbal purchase, rapidly; salesmen correct errors. Ascertain total of sales by multiplication. Take packages to desks.

Teacher: "Four pupils stand at desk."

"How many have we in each of their four piles, class?"

Ans. "Five."

"If we divide each pile into fifths, how many fifths would one package be?—Two packages?—Three packages?—Four packages?"

"And the whole pile, or five packages?"

Ans. "Five-fifths."

"Then if there are five-fifths in one pile, how many *fifths* in all of the four piles put together?"—Await answers. When correct answer appears, teacher writes 20/5 on board.

"Let us take away three packages from this pile." (Monitor or teacher removes them.)

"We have taken away three-fifths

of a pile. Then we have three whole piles and two-fifths of a pile over." Monitor, clerk of store or teacher writes $3\frac{2}{5}$ on board.

"How many fifths are there now all together?" Get answer and be sure all see it clearly. Observe slower pupils, and if need be, let them walk to desks in use and count the packages aloud for the benefit of all. When absolutely clear teacher writes 17/5 on board and works it out by short division placing answer $3\frac{2}{5}$.

"Then 17/5 of anything equals three whole ones and two-fifths over."

Teacher continues taking three piles and four-fifths, two piles and one-fifth, etc. Teacher in this way shows class, each time working it out on the board by short division, thus illustrating objectively the changing of a mixed number to an improper fraction.

Cause three or four other pupils to stand and repeat similar practice as desired for other combinations. All pupils may set aside one package for drill in fourths, or two for drill in thirds according to available time.

Returning packages, teacher orders; "Each pupil pass one of these packages (from hand to hand) back to monitors for return to shelves."

Teacher: "How many fifths of your original purchase have you left?" —4/5.

Teacher to salesman: "What fraction of your *entire sales* have you had returned?" (Point to all returned packages.)

Ans. "One fifth."

"What fraction do you want now?" Ans. "The other four fifths"—"Pass"—Thus returning all packages to the shelves speedily. End of store practice.

This last operation demonstrates that multiplying (or dividing) both numerator and denominator of a fraction by the same number does not change the value of the fraction.

All of the "Three principles in fractions" can be so easily demonstrated during Drills 15 to 21, (and several others), that a separate drill-plan for this subject seems unnecessary.

Drill 21

Subtraction of Fractions

Subtraction of a fraction from a whole number—(Two lesson suggestions)

1st lesson.

Teacher: "Shall we use the Model-Store today?" (Appoint one salesman for every desk-row or group-division of pupils.)

Conduct purchases verbally as rapid drill in multiplication, or use toy money if class is in special need of such drill. Using money takes more time but fixes the drill more firmly in the memory.

Teacher: "When you buy, be careful to select only one brand and size of goods. Whether you buy candy or soap or baking powder or pens get only one sort, *and as many* of the kind you select as I tell you to buy."

"First row form line; all go to one salesman and buy three articles of one kind. Second row; go to your salesman and buy five like boxes: third row, similarly, buy four"—etc., until each row has been directed to buy a specific number. "Take them to your desks."

When drill is over, teacher says: "Each of you set aside a part of your purchase, choose for yourself whether to set aside one or two or three, etc., and find what fraction of your purchase you have left."

Have pupils stand and recite.

Teacher: "How many packages did you purchase, John?"

"My purchase was seven packages."

Teacher: "How many did you set aside?"

"I set aside 2 of them."

"What portion of your purchase was that?"

"Two-sevenths of my purchase."

Teacher: "What portion remained?"

"I have five-sevenths of my purchase left"—etc.

(Have many pupils recite placing example on board as each one gives it, viz., 1 minus $2/7 = 5/7$, etc.

Packages returned to store:

2nd Lesson

Rapid drill as before, securing packages by purchase.

Direct each pupil to purchase the same number of packages—as—three or four or five.

Direct two rows to work together in pairs—three rows to work together in groups of three pupils each, or combine them so that no pupil works alone.

Direct each group to set aside some part of the grouped purchases.

Teacher asks:

"How many purchases had this group all together?"

"Four."

"How many boxes all put together?"

Teacher finds four purchases, totaling sixteen boxes.

Teacher or clerk puts the figure 4 on the board.

"How many boxes did you set aside?"

"Five boxes."

Teacher: "What fractional part of one order is set aside?"

"One whole order and one-fourth of an order over."

Place example on the board as it develops.

Teacher: "What part of the four orders have you left?"

"Two whole orders and three-fourths of an order."

Example now on the board is as follows:

4 minus $1\frac{1}{4} = 2\frac{3}{4}$

Question by groups placing each example on the board as each group gives it.

Develop that the denominator is simply the *name* of the purchase; that "nominate" means to name, as "Sevenths" is the name of a fraction, "Fifths" is the name of another fraction, "Fourths," etc.

Return boxes to store as before.

Drill 22

Multiplication of a whole number by a fraction

(This drill can also be slightly varied to demonstrate changing fractions to equivalent fractions of higher or lower denominations and reducing them to a common denominator.)

Here also each order is the unit—the number of articles the fractions. Appoint salesmen in any of the usual ways.

Teacher: "This is bargain day at the store. We will sell eight of any ten-cent article for fifty cents, but you must buy eight all alike to get the bargain."

"Half the class (every other one as seated) go to the store and buy fifty cents worth of any ten-cent thing you want. Take them to your desks."

Teacher: "You each have eight boxes that cost you half a dollar. All right. Sell half your purchase to the boy (or girl) behind you who has none."

Teacher: "To be sure you deliver the right number we will figure it out." (The class will tell you at once that it is 4, and this comprehension is what is sought in this lesson.)

"If you were selling twice as many, you would multiply eight by two. You are selling one-half as many so we must multiply eight by one-half. How will you do it?"

Teacher writes on board 8 times 1/2 = and pauses.

She explains process by which she does it. 8 times 1/2 = 8/2 = 4.

Teacher: "So you will sell four boxes." Cause class to politely sell

and deliver the four boxes as language practice, and to maintain the play interest.

Teacher: "Now you all have four boxes. What did they cost you?"

Ans. "Twenty-five cents."

"What fraction of a dollar?"

Ans. "One-quarter."

"Let us figure how much each box cost you at this bargain sale."

"Each box is one-fourth of your purchase."

Teacher places on board "25 cents."

"You each spent 25 cents. Multiply the twenty-five by the one-fourth and you will have what each box cost."

25 cents times 1/4 = 25/4 = 6 1/4c.

Continue thus objectively to teach the multiplication of a whole number by a fraction, or elaborate by making return of boxes to shelves also a demonstration as follows.

Cause a salesman to address the class announcing:

Salesman: "I find I can sell these goods at full price. I will give you 7 cents for each package."

Teacher: "How much profit will you make on each box by selling back?"

Ans. "Three-quarter cents."

"How much on your 4 packets? Each pupil figure it out on paper and as soon as finished, take boxes to store and complete the transaction."

Teacher finally gives verification on the board of 4 times 3/4 c. = 12/4 = 3c. profit.

Drill 23

Lesson in bills

Have model bill on board, covered by map or curtain.

Appoint two (or more) clerks, selecting "quickest" pupils. Place them at teacher's desk or end of store.

Appoint as many salesmen as can be used without crowding.

Teacher: "When we go to a real store and purchase several articles to be sent to our homes, how does the grocer or his salesman remember what we order?"

"He writes the names of the articles on a paper."

"Does he write anything except the name of the article?"

(Ask several students. Probably the desired answers may be gotten from pupils, viz. number of articles, price of each, etc.)

Teacher: "This morning we will make out a bill such as a real storekeeper might make to send home with our goods."

"Now let us all make out bill heads using the form we have on the board." (Show the bill on the board.)

"Make believe you are buying at one of the stores your family goes to."

Teacher: "John, from what store do you wish to buy?"

Teacher: "Each write the name of your store on this line, (Teacher points to board) write 'Dr.' after it." (They may make them out to the Model-Store "Dr." if uniformity is preferred.)

Teacher: "Write date here—"

"Take one dollar, go to the store, think of three different things you

would like to purchase today, supposing that you cannot spend quite so much as one dollar, and buy them."

"See that change is correct. The salesman will write your name on the bill." (Show where.)

If money is used, salesmen keep cash book of receipts.

"Carry boxes to desk. Write out items and prices, find total."

"As soon as you have your bill made out neatly take it to clerk," (where teacher is watching). When correct, clerk signs "Rec'd. Payment," date and initials.

Teacher passes down aisles and as fast as pupils finish they take their packets back to the store. The first ones through may act as distributors for the others to insure prompt replacement on shelves in good order.

Different ones that have finished stand and tell what they bought and how much change they have. Teacher puts the numbers on the board and class adds quickly (drill).

(The bills may be preserved as a basis for prize awards if the school is using the model store medal, prizes or certificates of merit.)

In such case pupils may be required to make over the bills, out of class, if the work is poorly done.

When whole class has finished, teacher asks:

"Have you paid your bill, John?"

"What have you to prove that you have paid?"

Ans.—"It is receipted."

"Does a grocer do this when you pay his bill?"

"Yes, he receipts it."

"How does he do this?"

Show the form of the receipt on the bills, placed there by the clerk.

"Why should a bill be receipted when it is paid?"

(Discussion and explanation.)

"Let us have all our bills receipted when paid, from now on. That is good business."

Notes

Drill 24

Lesson in making change

Teacher: "When we paid our bills during the last store play, how did we know we got the correct change?"

(Ask several pupils how they determined this. Let them tell how they usually find out if their change is correct. All ought to know how to count change by adding. If so let them tell in their own words to the class or they may buy something from the store and demonstrate there.)

"We will make change as most merchants do."

"I will appoint the storekeeper and you may come up one at a time and buy. Be sure to bring a piece of money not smaller than a fifty-cent piece." (Large enough to need change after the purchase.)

Send about half the class to blackboard to write the figures of the sales as they are called off. The rest leave their seats and take seats facing boards to criticise and call out errors when not personally acting as purchasers. During the lesson the two groups exchange places.

Teacher chooses an apt pupil and says:

"John may buy first and we will all watch closely so we may more easily tell if our own change is correct."

John says loudly, "I want a package of—. How much is it?"

Salesman: "Twenty-five cents."

Pupils at board write down twenty-five cents.

John buys again in same way. Noted on boards.

Teacher: "Class—find total of purchase."

John offers dollar-bill in payment.

Salesman calls out, "One dollar—thank you"—class writes $1. Subtract total from it while salesman counts change by addition (under teacher's direction) totals compared and corrected.

Teacher: "Count your change, John."

"Is it correct?"

"Now, John, they will buy from you. You may be storekeeper. Put your purchases back on the shelf."

Next pupil says, "Good morning, I wish to buy—(three cakes of soap.)" Proceed as before. Gives in payment a fifty-cent piece. Continue practice as desired.

FOURTH YEAR—SECOND HALF

Addition and subtraction of mixed numbers involving fractions already used, is demonstrable by combining features of Drills 18-19-20-21 and 22 in many different ways, changing the numbers of articles purchased, having half the class buy one quantity and half a different quantity, afterward combining in pairs, teacher selecting the numbers to be purchased in advance to insure easy problems that will convey the principles involved clearly and quickly.

Drill 25

Least Common Multiple

(Teacher measures boxes and selects exact materials in advance.)

Teacher: "Today we wish to arrange a neat display of our stock of goods just like a show window. The boxes are of different sizes but we want to make neat piles that are all the same height. Remember each pile must be the same height as the others. We have some boxes 8 inches high, some 12 inches high, and others only 4 inches high." (Approximately)

"What is the size of the lowest piles that will be of one height."

Probably no one will be able to guess this without help. If desired the teacher may have boxes piled experimentally by guess work of different pupils, developing *how difficult* it is to find this out. It takes a little time, but the impression is so deep that the time is well spent.

Then say: "Do you remember that

we have had quick and easy methods of finding other things by arithmetic? Now we wish to find the smallest number that will exactly contain 12-8-4."

"There is an easy way to figure this out. I will show you first and then you can prove it by setting up the display."

"What are the prime factors of the first number, 12," (put them on the board) 3 x 2 x 2.

"What are the prime factors of 8?" (put them on the board) 2 x 2 x 2 directly under the others.

"What are the prime factors of 4?" (Put them on the board) 2 x 2 directly under, producing the following.

12=2 x 2 x 3
8=2 x 2 x 2
4=2 x 2

"Now we will find the product of all the prime factors that are not repeated. For instance we will take (always,) *all* those that occur in the largest number, viz. 2 x 2 x 3. In the next we find in duplicate the first two above but the third number is different, it is a 2 instead of a 3, so we use the next and now we have 2 x 2 x 3 x 2. The third contains no number not found in the other numbers so we use no more and simply find the product of those we have which are 2 x 2 x 3 x 2=24. This is called the least common multiple. Therefore, if we make our display 24 inches high all the piles should be even, no matter how many boxes are in each."

"Let us prove this. We will arrange these boxes on our counter and make sure."

(Have selected pupils make the stacks to prove this result. Use several other combinations of numbers also, to fix this principle in memory.)

Drill 26

Greatest Common Divisor

(Teacher makes personal selection in advance, of number and kinds of boxes to be used.)

Teacher: "When a merchant expects very rapid retail sales, he often has the goods arrayed in stacks, with exactly the same number of things in each stack, no matter whether one is large and the other small or not. In this way the salesman can tell at a glance how many have been taken from each stack by noticing how many remain. Would you like to arrange the store for such a sale? Let us hold a 'quick sale' of the following articles, so in arranging our counter this morning, class, we will use 20 boxes (baking powder) 15 boxes (fountain pens) and 10 boxes (biscuit) etc., etc."

"To get them in piles containing the same number in each and not have any left over, how many shall we put in each pile? Each of you take a pencil and paper and figure out how many there must be in each pile."

(Place on board 20-15-10)

(While pupils are guessing, select one pupil to go to the store to pick out and set up boxes according to the rsfit solution offered even if it is not correct. Then ask some other pupil who has perceived the correct answer and have his solution demonstrated.)

"This, class, we call, The G. C. D."

"Now let us see if we cannot do this by arithmetic easier than by the guessing method"—(Point to board 20-15-10).

"Think of some number that will be contained in each of these numbers."

"What is it, John?"

"What is it, Mary?"

(Ask several, and if incorrect answer is given, *show* that is it *incorrect* by placing the number as divisor, etc.

"Now let us try dividing by five." Work on board

5) 20-15-10

4 3 2

"Is there any number that will be contained in 4, in 3 and in 2, James?"

"No, there is none."

"Then we know that five is the greatest number that is contained in 20, and 15, and 10 without a remainder, so it is the G. C. D."

"Each pile will have five boxes."

(To fix this in minds of pupils, give other combinations such as 24, 18, 12 and have them place the boxes each time as before to prove and visualize the work, during or after solution.)

Excellent rapid drill in fundamentals may follow with the boxes, so stacked, by merely directing class to start purchasing. Stop buying by a sudden command when goods are partly gone. The salesmen and the class to call off the sales made by observing the depleted piles.

Drill 27

Square Measure

To give the children a conception of what square measure is and why it is worth while to understand it, also how to utilize it, begin (contrary to the usual development procedure) with a general outline; after which the meaning of the various tables will be clearer and the whole idea of square measure more promptly and more thoroughly understood by the class.

If the store is in a central location the class may be marched to the store or monitors may bring to the classroom a sufficient quantity of rectangular packages from the store. If the store is composed of movable units, those units containing rectangular packages may be assembled in the class room by monitors. A few boxes (such as talcum powder tins) that are not truly rectangular, should be on hand also.

The teacher will probably choose to paraphrase or elaborate the following brief outlines.

Teacher: "Can the class tell me the difference between an object that is rectangular and one that is not?"

Teacher (to promptest pupil):

"Point to a rectangular box in the store."

Teacher: "Is this box rectangular?" (pointing to one that is not so).

Teacher: (planning the usual rapid drill in the fundamentals) "Go to the store and purchase two rectangular boxes of different sizes. Conduct the purchase verbally, loud enough for the whole class to hear, ascertaining the cost of your purchase by addition.

Take your packages to your desk."

(The use of money would delay the rapidity of this drill.) Note: If a class has been marched to the store this rapid drill would conclude the operation at the store and the pupils would be marched back to the class room carrying their packages.

Teacher: "The men who made these boxes had to figure out how much paper or cardboard would be required for each thousand boxes they had to make. Does any one in the classroom know the kind of measure they would use to ascertain the quantity of material required?"

Teacher: "No one?"

Teacher: "Square measure, about which you have not yet learned, is necessary for this important transaction which takes place constantly in real business of almost every kind. Not only do they have to make the boxes, but your store-keeper has to buy the paper in which he wraps them for you to carry home and he has to pay for that paper and know how much he needs and how much it costs. So you will find square measure constantly useful to you all your lives."

Teacher: "Square measure is usually based on the square inch. Who can tell me what a square inch is?" (Accept answers for what they are worth—and if no one gives the answer as you want it, tell them that it is a surface one inch long and one inch wide. Show them a model square inch of paper). "So a square inch is a surface that measures one inch on each side."

Note: Send monitor to the board with a foot rule to draw one square foot. Explain it.

Teacher: "Look at the boxes you have bought and consider how you would estimate the amount of paper on the front of a box. You can see that if you know the amount of paper on each face of the box you can by addition and multiplication ascertain the total amount that would be required."

Teacher: "Take your rulers and measure the front of one of your boxes. For this lesson disregard the fractions of an inch but take the nearest number of even inches." Picking up a box from the nearest desk (or directing a monitor to present one) she measures a box that is 6 3/4 by 4 3/4 and directs the class to consider it as 7 by 5 inches.

Teacher: "Now each one take a ruler and find the *length* of the front of your box in even inches. What is the nearest whole number of yours Jack?—John—Mary," etc.

Teacher: "Now measure the *width* of the front of your box. What is the nearest number of inches of yours James? Mary? etc. Now find the product of the number of inches in length and the number of inches in width. This, boys and girls, will give you the number of square inches on the face of your box." Now pause here and let pupils work out their problems.

Teacher: "James, how many inches long and how many inches wide is your box?"

Answer: "It is 7 inches by 5 inches."

Teacher: "Then how many square inches on the face of the box?"

Answer: "There are 5 times 7 or 35 square inches."

Teacher: "How many in yours, Mary?"

Answer: "My box is 5 inches long by 2 inches wide. There are 5 times 2 or 10 square inches." (Ask as many pupils as teacher wishes to be sure they understand the meaning of square measure and the quick means of ascertaining it. Afterward explain in the usual way why this method is employed, using the base line of square inches multiplied by the abstract number representing the other dimension, with blackboard demonstration.)

Measure the other box each pupil has, for practice *after* understanding and to deepen and confirm the memory.

Teacher: "Who can tell me another instance where we might need to use square measure?" (Let children talk freely, one at a time, taking care to maintain the interest aroused by the handling of the packages and bringing out such examples as size of letter sheets, measuring the floor coverings, window shades, painting of walls, size of building lots, acreage square miles in the town, state or United States, and other usual factors until you are sure they understand the importance of the subject and the frequent application of square measure in actual life.

If the class has made rapid progress in grasping the basic idea there may be time to measure the other surfaces of the box to ascertain its total surface area, or this may be reserved for another lesson.

(*See rapid drill on next page*)

Monitors return boxes to store

If there is time the return of the boxes to the Monitors may be hastened and used as rapid drill by the following direction.

Teacher: "When I give the order to 'pass,' hand your boxes to the next scholar in front (or behind, or sidewise;—in the direction of the store) and continue to pass the boxes that come to your desk in the same way until the lines are clear, and all boxes are on the front desks. Keep mental count of all the boxes you handle including your own and remember the number."—"Pass."

Monitors then have all the boxes on the nearest desks within easy reach. A variation in this play can be made by having children from the most distant desks, who have no transmission of boxes to perform, walk to the front row and check the number of boxes received at the head of each row or assist monitors to move the boxes back to the shelves of the store.

Call on different pupils to state the number of boxes counted in passing, including their own.

Notes

Drill 28

Square Measure—Second Lesson

(Slight changes in teacher's orders enable this drill to be used for cubic measure demonstration)

Accomplish distribution of boxes as in drill 27, measure top surface of boxes, pupils write same on paper.

Teacher: "You have found the surface measure of the tops of your boxes. The bottom is the same size is it not? Then how many square inches in both top and bottom?"

"Write this number in the space you have left for it on your paper."

"Compute quickly the number of square inches in one *side*."

"How many sides are there?"

"How many square inches in both sides?"

"Write this number in the space you have left for it."

"Compute quickly the number of square inches in one *end* of the box."

"How many ends has the box?"

"Then how many square inches in the two ends?"

"Extend this amount in its space and find quickly the total square inches in the surface of your box."

(Similarly, measure the other box purchased;) then:—

Teacher: "Change boxes with the pupil sitting next to you."

"Measure his box according to these directions."

"Extend your number and find the total."

Teacher may have them measure any number of boxes by exchanging with other pupils or buying other boxes where exchanging pupils have

duplicate boxes. After they have measured as many as the teacher wishes, ask different pupils to read their results, placing the answers on the black board as follows?

(Name of box) 292 (?) square inches.

"How many agree?"

(Name of box) 54 (?) square inches.

"How many agree?" etc.

Ascertain from pupils if any had *all* correct, 4 correct, 3 correct, etc.

Return boxes to shelves as in drill 27.

Drill 29

Obvious applications of liquid measure or dry

Many Model-Stores possess liquid and dry measuring units. Sand, beans, blocks of wood and even potatoes are used, while water is always at hand. The measuring play at the store can be carried out in usual form of buying and selling for rapid drill in fundamentals and always arouses the liveliest interest.

Supposing gill, pint, quart and gallon measures are on hand—also paper bags of different sizes—also sand.

Have one row each buy a gill—sand being put in small paper bags using gill measure—children return to seats.

Teacher gets from them response that 4 gills = 1 pint and tells them to find number of pints purchased by different rows of scholars.

"Next row buy each a quart."

Teacher asks how many quarts = 1 gallon, etc., etc. "Then if 4 quarts equal 1 gallon, how many gallons have you? Also, how many pints have each of you in your quarts?"

"Then, if each has 2 pints, how many pints altogether?"

This play is utilized for drills on the table itself, and also on reduction both ascending and descending.

As further drill on liquid and dry measure

Teacher: "Jack buy me 18 gills, any liquid—ask for it in pints." Pupil finds out by himself that 18 gills equal 4 1/2 pints. Goes and buys and reports later. While he is at work the teacher starts others on similar errands.

Teacher: "Mary buy 3 quarts of molasses (water). Ask for it in pints." Mary reports later, 6 pints.

This drill should be conducted quickly keeping all children busy buying or reporting, and is good drill in reduction, problem work, making change, etc.

Problems covering reduction in liquid and dry measure.

Request the storekeeper to sell potatoes, onions, tomatoes, etc., at so much per bushel and all liquids at so much per gallon.

State to class as follows:

"Tomatoes are $3.20 per bushel. Buy 1 peck, James; 4 quarts, Alice; 6 1/2 quarts, Jane; 1/2 peck, Mary," etc.

Tell them to take exact money needed. It may take a few minutes for them to figure it out. In the meantime teacher continues "Molasses is $.64 per gallon. Buy 2 quarts, Harry; 1 1/2 quarts, Tom; 3 gills, Harold; 2 pints, Mary," etc., using entire class for the above work.

After all are back in their seats, teacher requires them to stand and state thus:

"Tomatoes are $3.20 per bushel, I bought 1 peck and paid 80c. for it."

"Tomatoes are $3.20 per bushel and I bought 6 1/2 quarts for 65c." Continues in this manner rapidly throughout the class.

Note: After recitation, let each pupil write on paper the number of gills or pints or quarts purchased. Return the purchases to the store and check up the amounts the clerks received, kept on board or slips of

paper. These must tally in order to be correct. If not, mistakes must be found and rectified. This plan requires a minimum of material in circulation and is an aid to accuracy.

Notes

Drill 30

Aliquot parts (To be given early.)

Definition: Aliquot: Contained in another number without a remainder.

Teacher directs as follows:

"Mary, go to the store and spend 9/10 of a dollar."

"Jack, spend 3/4 of $1.00."

"Jane, spend 1/2 of $1.00."

Teacher continues using all the parts that equally divide the dollar. When all are seated she requires them to answer quickly thus:

"I bought one box of — for 1/10 of a dollar or $.10."

"I bought one packet of — for 1/20 of a dollar or $.05, etc."

Further Drill:

Supposing aliquot parts have been taught previously.

Let first row go to store and purchase articles for 1/2, 7/10, 1/5 of a dollar and return to seats.

Next row pass to store and buy three articles for 3/4, 4/5, 3/10 of a dollar and return to seats.

Next row take three different aliquot parts and so on throughout class. This can be very quickly done and all will soon be back in their seats.

Teacher has first row stand and each give the following:

"I spent 1/2, 7/10, and 1/5 of a dollar. Altogether I spent $1.40."

Requires next row to stand and continues throughout entire class. Also drill may be given for making change—as, in the first row,—

"If I spent $1.40 and gave the dealer $2.00 I have left $.60."

The various operations in fractions usual at this period can be well demonstrated by obvious modifications of drills 18 to 22; and cubic measure by slight changes in drills 27 and 28.

FIFTH YEAR—FIRST HALF

Outline and Suggestions

In a representative syllabus, the following heads outline the work of this semester.

Previous drills with the notes below will enable the teacher to make the new ideas clear to the pupils in one session instead of two or more. Especially will it be found that the duller pupils more easily keep abreast of the class as the term proceeds, saving much wearisome effort with these "teachers' trials."

Repeated use of inventories (see Drills I to VIII), the constant employment of bills, both wholesale and retail, made out during a store "practice in the fundamentals" and *preserved* for use in regular class work later, supplementing the examples in the textbook, will be found very helpful as the class understands the problems it has created for itself and feels a deeper interest in these examples than it can possibly feel in the formal "puzzles" of book arithmetic.

Reading and writing decimals modify drills 16-23-24.

Reduction of common fractions to decimal fractions and reverse, also fundamental operations in decimal fractions including Austrian method of placing the decimal point in division.

Modify drills 18 to 22, also 16-23-24.

Abstract and concrete drill on the four fundamental operations and fractions. Employ all appropriate drills.

Review tables of linear, square and

cubic measure Elaborate drills 13-14-27-28.

Memorize number of cubic inches in a bushel or a gallon.

Bushel 2150.42 cu. in. = 1 1/4 cu. ft.
Gallon (231. cu. in.) = 7 1/2 gal to 1 cu. ft.

Store play, in fundamentals as usual, boxes on desks.

Questions: If this can holds 1 pt., how many quarts (or gallons) in a case of 144 cans?

If this box of cereal holds 1 1/2 dry quarts, how many bushels will it take to fill 2000 (?) boxes?

The real contents of packets can be obtained by actual measure, and any variety of modified plays that will prove of absorbing interest to the pupils can be planned, all helping the teacher to reach their comprehension more rapidly, and clinch the memory more firmly than any abstract teaching.

Applications of square measure, triangles, etc.: many "window displays," "counter-exhibits," etc., are possible, also demonstrating the number of boxes in a given area by actual placing of same.

Application of cubic measure, measure boxes in the store. Boxes may be loaned, taken home, measured as the basis for home work problems, and returned the next day. Ascertain total storage space of store shelves. Measure total capacity of all the round cans that can be placed on the shelves. Figure waste from circular form as compared to total cubic inches of shelf space, etc.

FIFTH YEAR—SECOND HALF

Outline and Suggestions

Reviews of fundamentals, tables of measure, etc., are all based on previous drills.

Teachers who have knowledge of business find it a great advantage to organize a pretended partnership or, later a corporation, which "owns the store" and keeps records of its total sales, buying at wholesale to "renew stock."

Establish foreign branches and deal with the English branch whose supposed transactions are all in English money, which must be made to balance with the store's books in American money.

Circular measure is easy with the various round cans and strips of paper with ruler, or tape measures.

Tables of denominate numbers are splendidly demonstrated by the store.

The opening remarks of drill 27 pave the way for explanations of ream, quire, etc. Allowing different sections of the class to represent different "foreign branches" and price mark the goods in English pounds, French francs, German marks, etc., is the quickest way to make foreign money (and exchange) familiar and unforgettable. Scores, dozens, gross, and great-gross are simply wholesale buying and selling, the most manifest use of the store plays.

Memorize number of pounds in a bushel of potatoes, wheat, corn, barley oats;—a bbl. of flour or apples, etc.

Wholesale grocers are usually packers of bulk goods in cans, and boxes to a considerable extent.

Write wholesale orders for goods by above measures, and find how many packages can be filled, the

teacher placing a specific (assumed) weight on contents of each can or box. Many of the boxes have the contents measure marked on the labels.

Bills and statements of account: The use of the store for this demonstration should not require elaboration. Many children have done enough shopping to almost conduct this lesson with a few hints from the teacher.

Here the store begins its industrial utility, and carries the power of the school to prepare the pupil for after life beyond anything heretofore possible in class work.

Receipts—a constant store practice in most of the drills.

Simple Accounts: By appointing clerks as well as salesmen and having purchases "charged," the usual play demonstrates clearly.

SIXTH YEAR—FIRST HALF

Past type drills, each carried a step farther by the teacher's comments will make weekly use of the store a constant help to every teacher.

SIXTH YEAR—SECOND HALF

Store Keeping Through Sixth Seventh and Eighth Years.

NOTE: Practically every syllabus specifies for each higher grade DAILY practice of the fundamentals, because it was found that without such practice a large percentage of graduates could not correctly add up a bill of goods when employed in a business capacity.

Have this practice take place at the Model Store about once each week, teachers directing the work as for the lower grades using preceding drills with larger numbers, and other elaborations. While doing these exercises write out (and preserve) the orders, bills, receipts, inventories etc., needed to later perform the grade work based on the class partnership—corporation—bank, etc., as hereafter outlined.

Notes

Drill 31

Profit and Loss

Teacher: "Who would like to make some money today?"

"Tell me one way you might make money, James, Mary," etc. (probably will get answers specifying different sorts of personal labor, etc.).

Accept these answers for what they are worth, question several to stimulate thought and ask:

"How do you suppose Mr. . . . . (name some local dealer) makes money? All think."

(Probable answer): "By selling goods."

"Does he have to pay for the goods he sells?"

"Yes."

"Then who can tell how he makes a profit on them?"

Develop that he must sell them for more than he pays.

Teacher: "Let us see if we can show how to make a profit on some goods that we may buy in the Model Store. Each pupil in the (first) row may purchase five articles at the lowest price the store keeper will make for you. Return to your seats with your purchases."

Teacher: "John, you may sell yours to any pupils in the class asking any reasonable amount for the goods."

Encourage appropriate use of language; let class suggest and criticise. (John finds that he cannot get more than the store price. If any pupil offers more, teacher calls attention to the error of judgment.)

Teacher: "How then does Mr. . . . . make a profit?" Develop that he buys in quantities, also that it often

costs just as much for the time of the saleman to make a dollar sale as a $100 sale. Because the selling-cost on sales would be saved by buying $100 worth, everyone makes lower prices for large sales.

Teacher: "Mr..... keeps a lot of things in his store, so you can get a little of each conveniently whenever you want it. He has to pay rent. So his customers are willing to pay for this service too."

Teacher: "We will call the store a wholesale store today. John take 2 partners and order $100 worth of (the thing he bought). The store will sell you $100 worth at list prices for $75. Now make the sale you tried to."

(Direct each pupil to select a purchase and figure cost and selling price of his goods in like manner.)

(As soon as this is done ask pupils to work either on board or on paper at seats—quickly):

"Find the cost of the goods you bought."

"Find the selling price of the goods you bought."

"How much profit did you make?"

"What part of your cost was your profit, John, Mary, James?" etc.

"If your profit is 1/3 of your cost, John what per cent is that?"

"How many hundredths is that?"

(Question quickly, and insist on rapid, accurate answers.)

(Other pupils may be buying and selling at this time or may check the answers as given by those who have already purchased, and themselves go to the store for their purchases afterward.)

Drill 31—Continued—Variations.

Note: In connection with this drill the teachers' attention is called to an article in Part Three of this book entitled "Why is a Profit." See page 144.

Teacher: We have been selling at a profit. Do you think merchants always make a profit on the sale of goods?"

(Let several pupils respond, get as many ideas as possible from them—as to what goods are apt to be a profit, a loss, etc. In what way goods may become a loss as—by damage, fruit spoiling, eggs broken, etc.)

Teacher: "Today, class, we are not going to have a very good business day, for we are going to sell goods for less than they cost us, just as all store keepers must do some times."

Note: Get morning newspaper, note prices on corn, wheat or other articles in store. Be sure the salesman has higher prices.

(Teacher directs as many pupils as planned, to buy a number of articles, and then reads from the paper that today's prices are lower than pupils have paid. If they do not sell, they may go still lower. Teacher directs to sell at once at the market price, (a lower price than they paid), or at least a part of their goods at lower price. Pupils sell to each other, making bills of sale (or memorandums for speed) and figure results.

(Class may find total loss of each pupil, working together, or may have each pupil work his own.) In the latter case a good exercise might be given as follows:

"John, how much did you lose on your goods?"

"How much did you sell them for?"

"Mary, how much did John's goods cost?"

"What fraction of his cost was his loss?"

"What per cent is this?" (find quickly.)

Question quickly.

"How do you find cost when we have selling price and loss? Selling price and gain?"

"How do we find selling price when we have both profit and cost?"

"Loss and cost?" etc.

Drill 32

Cash Trade and Quantity Discounts

Preserve the bills produced by drill 31 or other store practice, for use in class practice and review later.

Have the store articles marked with some per cent discount for buying a certain quantity of goods. This may be done by means of cards—attached to the goods or to samples arranged on the counter: or, a display card or blackboard list could show the bargains and discounts to be allowed.

Send class to store to make their purchases and instruct them to buy large numbers of packages of that article on memorandum, accepting single packages as samples of record. Buying wholesale, by dozens, hundreds, gross, great gross, thousands (indicated by M on memorandum).

Teacher: "Let us see how much we have saved by taking advantage of this sale, class."

"Compute quickly (mentally if possible) the cost of your purchase at the *regular* list price."

Pause a few minutes.

Teacher: "How much is yours, Mary, John?" etc.

"What per cent discount is allowed on your article, James?"—10 per cent.

"Were there other discounts?"

"No."

"Very well. Find quickly how much ten per cent of the cost of your purchase is."

"How much is allowed on your article, Jane?"

"Twenty per cent quantity discount and five per cent cash discount."

"Find how much the discount amounts to on your purchase."

Each one find this for himself.

"Now, what is the actual cost of your purchase today (deducting the discount from the regular price)?"

Have pupils orally recite their own problems, e. g.:

"I bought 50 cans talcum powder at 25 cents per can. The regular price would be $12.50—I am allowed 10 per cent discount or 1.25—so my purchase today will cost me $11.25."

Some results may show 1/2 cent or other fraction. Commercial practice in disposing of such fractions may have been given before this, but here is an excellent demonstration and reminder.

In this or a later lesson at the store, discounts should be quoted such as 40 per cent in lots of 1000 cases; 30 per cent in lots of 500 cases, (quantity discounts); 10 per cent jobbers—or trade discount, 20 per cent retailers or trade discount; 2 per cent 30 days time discount; 5 per cent, 10 days cash discount; net 60 days.

All but the cash discounts are merchandizing practice.

A good exercise here would be a discussion of reasons for bargain sales—competition, over stocking, etc., encouraging pupils to discuss and originate freely

Modern business methods may be outlined.

Drill 33

Time discount. (Banking practice.)

As an introduction to this lesson, review cash discount and develop "List price" and that a discount from this price is called trade discount.

Teacher: "Today, boys and girls, we shall borrow money from the standpoint of the wholesale merchant who has bought direct from the manufacturer. He is sometimes allowed more than one discount, but needs money to pay for his goods until he can sell them and collect the actual money."

"You have seen that he is allowed discounts for prompt payment of bills. Such as 6 per cent in thirty days—net amount due in sixty days" (show forms 5/10, 2/30, net. 60).

Allow them time to exchange their bills or conduct fresh purchases at Model-Store causing pupils to buy more goods than they are able to pay for by giving appropriate directions, so each has a fresh problem to maintain interest and increase practice.

"We did not pay for our goods today, class."

"We are good customers at the Model-Store, so the proprietor says if we will pay for them within ten days he will allow us five per cent discount."

"Each one find how much five per cent of his bill is."

"How much, John, Julia?" etc.

"Deduct this five per cent from the amount of your bill, class."

"How much does that leave James, Jennie? etc. "Find quickly the *net amount* of your bill."

"To pay this net amount you must

have the money in ten days. I will be banker and loan you the money at six per cent per annum, taking an assignment of the goods as security. Figure what profit you can make by borrowing at this rate to pay at the commercial rate assuming that the goods will be sold and paid for in three months."

Question pupils (and require rapid, accurate answers) about the work they have just done and bring out any obscure points. Be sure they find also net amount of bill if paid in thirty days,—might show original bill with terms,—show bill after discount is allowed, and write check for payment of invoice. If this is not expected, until 8th grade, show form of check book stub, a record, as follows:

No.
date
order of
amt. of Inv.
Disct. per cent
Amt. of check

Drill 34

Price Marking Systems

Store application of lesson in private marking of goods, using one mark for cost and one for selling price. Explain that salesmen cannot remember prices for everything in busy stores, so many concerns mark prices in ways the public cannot read. Often they put both cost price and selling price on the tag. Supposing the following key to be used for cost prices:

Birthplace 1 2 3 4 5 6 7 8 9 0
b i r t h p l a c e
n for repeater

And this is key for selling prices:

Black Horse 1 2 3 4 5 6 7 8 9 0
b l a c k h o r s e
d for repeater

Thus the cost mark 779 would be LNC and the price mark 1120 would be BDLE.

Teacher: "Each pupil purchase one article—pass to seat and mark the article with the selling price mark and any reasonable cost price mark he may select."

(Rather than mark *on* the article, put the mark on a tag or slip of paper.)

"As soon as you have marked your box, exchange with your neighbor and find the profit and profit per cent on the article he gives you.

(e., g. Talcum powder $\frac{\text{B. H.}}{\text{W O}}$ - $\frac{15}{18}$ - profit .03 - or 20 per cent.)

Require each pupil to stand, state his problem or marked price, and give the profit and profit per cent, e. g.:

"Baking powder is marked I. E. or twenty cents cost; L. K. or 25

cents selling price. The profit is five cents and five cents is 1/4 of 20 or 25 per cent. Therefore I will make 25 per cent profit on this article."

Drill 35

Commission

Teacher: "This morning the Model-Store is making us an offer. If we make sales for the store, we shall be allowed a *commission* of 18 per cent on all we sell. Some of us will take orders and some of us will buy goods."

(Appoint about one-fourth of the class to sell the goods the others to remain in seats and order the goods.)

Teacher: "Each of the *commission agents* take paper and pencil and go to some member of the class for your order. Get your customer to buy five or six articles if you can."

"Buyers make memorandum of what you buy and prices."

(In some schools pupils have been sent to strange classrooms on such errands, to develop initiative, having to explain their whole errand to strangers as well as take an imaginary "order.")

Teacher: "As soon as you have your order, go to the store, fill the order, take it to your customer."

Teacher: "Each commission agent make out a bill for the goods sold."

"Purchasers make out purchase record to check bills."

Teacher: "What per cent are the salesmen to be allowed?"

"Agents, find how much 18 per cent of your sale is."

"How much, John, Mary?" etc.

"Then how much have you made for yourselves?"

"How much will the Model-Store receive?"

Teacher: "This is called *net proceeds*."

(Let a new section of the class act

as salesmen, now, and take and fill orders as before, changing the rate of commission.)

Question the pupils to develop; 1. Commission; 2 Commission agent; 3. Net proceeds to store; 4. Net profits to agents.

Tell them that if we actually handle the goods we are called "*Commission agents*"; if we simply arrange for the sale or purchase we are "*brokers.*" This can be brought out in conversation allowing pupils to discuss freely, to maintain their interest and enthusiasm.

Review difference between discounts for cash, for prompt payment and successive trade or quantity discounts from list prices—as on purchase of articles by carload, half carload lots, gross lots, etc.

Give practice problems in successive discounts. Find the given percentages by subtracting the rate of discount from 100 per cent and multiplying. Successively, after they have found the net amount of the bills, find the total discount by subtracting *it* from list price. This total discount divided by the list price of the bill will give one single discount that will be equal to the successive discounts. Show this on $1 also by discounting for 20-10-5 etc.

Drill 36

Statements

To make monthly or weekly statements, use bills that have been made out at the store and, using an approved form, have pupils prepare statements showing purchases, cash payments, balance due, etc.,—based on the transactions at the store which they conducted and understand. Pupils work more willingly on these than on purely imaginary documents. These balances may be paid by check, drilling on the filling out of stub first, then writing check—proper signature, etc.

Notes

Drill 37

Notes

Employment of Model-Store equipment is similar to Drill 31.

Teach that giving *credit* implies a *promise to pay*, a verbal or understood promise—then develop putting that promise on paper. Show the advantages of having written promises: secures payment at a definite time; can be converted into cash, etc.

Have pupils settle the accounts or bills by note, without interest at first. Discount these notes "at a bank" and receive cash or credit at bank for proceeds. Teach how this amount should be treated in the check book and the bank book. Show loss resulting from discounting notes. Develop who is liable if maker of note fails to pay at maturity. Reason for indorsement when note is discounted, etc.

The computing of interest and discount gives an excellent opportunity for drill in the sixty day or Bank method.

After drill on non-interest bearing notes, give notes in payment, that bear interest. Teach how these notes may be discounted.

Use of bank book and check book should be given throughout seventh and eighth grades. Models of these books may be obtained from the bookkeeping department of the Junior or High School.

Notes

Drill 38

A Cash Account

The pupils in higher grades frequently form a partnership owning the store, later on a corporation with bond and stock issues, elected officers, directors, etc., and by inventory find value of store, purchase the business and work out the chief transactions of business organization, hiring salesmen for the store (salaries and commissions) buying some store furniture, stock of goods, paying for boy for help, paying for advertising, etc., that is, carry through a set of transactions such as the following.

June 1 Invest $500 in business.
" 1 Buy a typewriter or cash register for $50.
" 1 Buy goods (selected) $125 (see inventory of value of goods on hand in the Model-Store for starting point.)
June 1 Sell goods $75 (total of classwork purchases.)

(Goods returned to shelves *as if new stock*, bought at wholesale prices. Thus stock on hand always keeps ahead of sales.)

June 1 Pay cash for Advertising $8.
" 1 Pay boy for help in Store $4.
" 1 Buy paper, string, etc. $15.

Great interest in this partnership usually develops.

In this connection teach, Assets, cash asset, how it may be increased, how decreased. Teach rules for debiting an asset account, for crediting an asset account, what the balance of the cash account shows.

Make a cash account on ledger paper of the suggested list of transactions. Let them use school money and check up the cash on hand at the

end of the transaction with the balance of the cash account, etc. Completed cash account as follows:

CASH

Dr.		Cr.	
June 1 Investment	$500	June 1 Cash register	$ 50
" 1 Sales of Goods	75	" 1 Purchase of Goods	125
		" 1 Advertising	8
		" 1 Help in Store	4
		" 1 Paper, bags, stamp, etc.,	15

Bookkeeping terms and principles may be developed from this, such as that an account is a systematic record of items all of which relate to the name of the account, arranged as to debit and credit.

Show that cash is an asset. Cash is real, but asset may be increased and decreased, and how. This may be carried as far as desired toward teaching bookkeeping through the account.

Drill 39

Merchandise Account

Repeat drill 38 and carry it much further in 8th grade than drill 39 in seventh. In the 8th grade teach also Mdse. account, Furniture and Fixtures account. Elaborate on the transactions and at the end of a period of business have an inventory taken by pupils.

Using the following form show profit or loss on trading by means of

Mdse. account.

Sales to date		879
Purchases	1289	
Deduct		
Inventory at end	592	
Cost of sales	—— 697	
Gross Profit on Trading	182	
	879	879
Gross Profit on Trading		182

Continuing this form of income, profit, and loss statement, (approved by the Department of Education; state of New York) use following:

Gross profit on Trading		182
Expense, Loss	27	
Net profit	155	
	182	182
Net profit, (down)		155

Notes

Drill 40

Trial balance

Using outline already given in Drill 38 covering cash, mdse., etc., develop other accounts, Furniture and Fixtures, expense, Proprietor's acct., etc. After these accounts have been developed have all accounts on the desk before the pupils. Using first item in the cash account (investment) have them find the same item in some other account. This will be found in Prop. account (show that it is a credit). Check next item in cash account (Sales, $75) find same item in some other acct. (Mdse. acct.) In this manner check all items in cash acct. and their corresponding debits or credits in some other account. Develop equal debit and credit for each transaction.

Discuss methods of local stores of entering daily transactions, explain use of original entry book. Next, using the same list of transactions from which accounts were made, working with the class, class using sheet of journal paper, teacher working on Blackboard; make Journal entries for the transactions with explanations, etc.

Supply to each student a sheet of ledger paper. Open on this the necessary accounts for posting the transactions already entered in the Journal.

Working on B. B. with the class, class using Journal already prepared and Ledger sheet, post to these accounts all the debits of the transactions, then post the credits. Compare this with accounts prepared from transactions, review characteristics of each account.

Notes

Drill 41

Trial balance (continued)

Take a Trial Balance of the Ledger.

Teach pencil footing of accounts. Have all accounts pencil-footed.

Supply one sheet Journal paper, instruct class as to proper heading, date, etc.

Next find Balance of Proprietor's account, how much is it, on which side is it?

Using space at left of sheet for folio number, enter the name of account and extend the balance in its proper column, inserting folio No. as follows:

L 2 (J. G. Smith,) Prop. $2800

Continue finding balance of accounts, placing Ledger Folio, Name of account extension, etc., as found.

When this is completed, pencil-foot the trial balance. If it balances, foot and rule, show correct ruling.

Question students:

Teacher: "What is the purpose of Trial Balance?"

"Does it prove posting to be correct?"

"No."

(Show reason why not—such as placing "T" accounts on board, posting some debit to the debit side of *wrong* account, to show that T. B. still balances.)

"Then what does it prove? Simply that the ledger is in balance."

Drill 42

Suggested list of transactions

June 1 Students firm or corporation invests $5000 in a business.
" 2 Buy the stock in the store for $1500.
" 2 Purchase the fur. & fix. of the store for $200.
" 2 Engage a bookkeeper for the business, at a salary of $60 per Mo.
" 2 Give the bookkeeper Power of Attorney.
" 2 Open an account with The First National Bank depositing $3000.
" 3 Arrange for hand bills and adv. with a local printer and pay cash for it $25.
" 3 Sell merchandize from the store—total sales for day $60 cash.

(Note: Class uses store occasionally for rapid drill in the fundamentals as required by syllabus, and *these transactions* provide the actual experience with what takes place regarding every purchase in any business. Keep all bills made during store practice also checks, notes, etc., as the basis for class work illustrations.)

June 3 Buy paper, string, etc., $15.
" 3 Pay rent of store for June by check $60.
" 4 Sell Mdse. from store—sales for day $180. (possibly get record of day's work of a lower grade class.)

June 4 Purchase from the representatives of a wholesale house (Blank & Co.) mdse. $150. (name articles present in the Model-Store, amounts optional) arrange with the agent that you are to have 30 days in which to pay for the goods.

" 5 Pay delivery boy $3 for this week, woman for scrubbing floors $2.

" 5 Purchase stamps, envelopes, etc., $3.

" 7 Sell groceries to J. Smith (or a pupil) $35 and arrange with him that he may have the goods on account.

" 7 Sales for day in cash $200.

" 8 Give the bookkeeper a check for his first week's salary $15.

" 8 Purchase mdse. on acct. from Blank & Co. $175. (Employ names known in Model-Store if preferred. It helps pupils to keep proper relations of accounts in mind.)

" 8 Sell mdse. on account, 30 days to L. Baker (or a student from 7th or 8th grade) $60

" 8 Cash sales for day $160.

" 9 Give Blank & Co. your 10 day note in full of acct.

" 10 Receive from J. Smith check for $20 to apply on acct

" 10 Cash sales for day $185
On account sales for day.
L. Baker $35 J. Brown $20
T. Lynch $18 (Substitute pupils' names)

" 11 Receive from L. Baker a 10 day note for $50 to apply on account.

" 12 Deposit cash $250.
(In most cases, the pupils have by this time formed a

bank and keep its affairs in as much detail as possible.)

Jne. 15 Give check to Bookkeeper for week's salary $15.

" Pay delivery boy cash $3
Pay woman for cleaning $1.50

" 15 Cash sales for day $150

" 15 on acct.
L. Baker $15 J. Brown $18.
T. Lynch $25 (use student's names.)

" 18 Send check to Blank & Co. $75 to apply on acct.

" 19 Send check to Blank & Co. for note due tomorrow.

" 19 Cash sales for day $125.

" 21 Receive from L. Baker check for note due today.

" 21 Pay Delivery boy cash $3.

" 21 Deposit in bank all checks and cash $300.

" 22 Give bookkeeper check for week's salary $15.

" 24 Purchase mdse. (selected) from Blank & Co. on acct. $300.

This work of Bookkeeping may be carried much further in 9th year as preparatory work for illustrative Book keeping.

The firm or corporation of students, as proprietors of store, hire students as clerks and bookkeepers. Outline the duties of the bookkeeper when you engage him. Discuss freely with pupils what they are to do in the store, such as:

Buy and sell goods.

Make change.

Make deposits, take care of check book, meet customers, and agents, answer telephone, act as company representative.

Drill 43

Following the preceding suggested transactions.

First Lesson, (Transactions to be announced by teacher—entries made by pupil after discussion of each transaction.)

Power of Attorney

Explain necessity, show printed form, discuss the advantages and need—how long it will be in force, etc., the proprietor's trust in the integrity of his bookkeeper, need of confidence, etc. File in suitable envelope the power of attorney.

Trans. No. 1.

Next make entry in Journal, supposing the company has just bought the business. Discuss entry, compare it with entry of a business just started, supposing this to be a "Going" business. In the latter case, the asset accts. in the ledger must show balances, which may be inserted by using a balance sheet. Assume it to have been a strictly cash business up to present time, (as personal accounts have not been developed. Also, Liabilities have not been used up to the present time) or make the purchase of Stock, Furniture and Fixtures, etc., as transactions of this month's business. The latter plan would be a better one.

Trans. No. 2.

Entry in Journal of Investment of proprietors. Discuss business occurrences.

Increased asset of cash, increased proprietorship. Have principles gov-

erning these entries given, develop proper explanation of the entry.

Trans. 3.

Discuss business occurrences. Increased mdse. asset., decreased cash asset, etc.

Trans. 4.

Proceed as in Transaction No. 3.

Trans. 5

When hiring a bookkeeper outline his duties as suggested in "Power of Attorney."

Drill 44

Opening Bank Account

Review drill 43 as basis. Open a bank account, use following steps:

Trans. 1 Determine the bank you wish to do business with.

Trans. 2. Determine what you wish to deposit.

Trans. 3. Go to bank with someone to introduce you. (Develop all this by real action of students using appropriate conversation.)

Trans. 4. Arrange with bank official to open a checking account.

Trans. 5. Receive Bank book, check book.

Trans. 6. Make out deposit slip.

Trans. 7. Place deposit slip and money in bank book.

Trans. 8. Go to Receiving Teller, watch entry made.

Trans. 9. Receive bank book back, *examine it for accuracy.*

Trans. 10. Enter amount of deposit in check book.

Trans. 11. Go back to your own store.

Trans. 12. Put check book and deposit slips in safe or cash drawer.

Discuss each of these steps and have pupils follow same routine until it becomes a fixed habit. Accept only the neatest and best work the pupil is capable of producing. Insist on orderly arrangement of all business papers used.

Notes

Drill 45

Developing Transactions

Enter transactions as outlined in Drill 42. Nothing new is given until the last [4th] transaction on the 3rd day.

Enter in Rent Payable account.

Teach use of back stub—of front stub,—detach first 2 checks of check book and turn stub over. The deposit has already been recorded on the back stub. Make out the front *stub* before check is written, giving full information. Make out check, what disposition is made of it, (use envelope for other's vouchers.)

If check book contains more than one check on a page do not teach deduction and forwarding until all checks on that page have been written.

Drill 46

Developing Transactions

Review previous drills.

First transaction on 4th day needs no *new* development. (See Drill 42)

Purchase on account.

Review cash purchase.

Develop liability (something owed or a right against our business) contrast and compare it with an asset.

This being the first liability transaction, proceed slowly, and discuss freely and fully.

Develop rules for Dr. and Cr. of Liability accounts.

Make entry.

Next 3 transactions need no new explanation.

Notes

Drill 47

Developing transactions

Review previous drills.

Refer to Drill 42.

7th day. This transaction would be much more real if sale is actually made to some outside pupil—perhaps of another grade.

Recall definition of asset, (something owned or a right against another person) discuss this transaction of selling on account, what business, occurrences, etc. Make entry,

Entry for cash sales.

8th day. Make entry for bookkeeper's salary—may now charge "office salaries" as pupil can easily comprehend this account.

Make out stub, draw check, pupil keeps check (and preserves it).

Teach deduction of the total of checks.

Balance forward on next back stub, etc.

No new idea until 9th day.

Drill 48

Developing transactions

Review as before, and proceed.

Review account sales, oral or understood promise, show the shifting of the Liability from Blank & Co.'s acct., to that of a written promise acct., review advantages of written promises, allow free discussion, (use of "T" accounts.)

Make entry

Notes

Drill 49

Developing transactions

Review. Follow up Drill 42

Next entry (check to apply on account) study carefully. Discuss part payments, payments by check, etc., asset shifted from Accounts-Receivable to Cash, etc.

Make entry, check placed in cash drawer or safe.

Nothing new until the 11th day but all these transactions should be discussed, before entry is made. Have sales actually transacted between students.

Drill 50

Developing transactions

Review, and continue to use papers with sales slips accumulating from "fundamentals practice purchases."

11th day. Review oral and written promises, discuss transactions, advantage of written promise, effect upon business of shifting of an asset. Entry for day's Transaction. Use of "T" accounts.

12th day. Recall other deposit, following as closely as possible the steps given for that. Enter in Bank Book, Check Book, etc., discuss effect on business, why no entry is necessary, etc.

Notes

Drill 51

Developing transactions

Review, with papers.

Nothing new until 19th day but each entry should be fully discussed, before entry is made. It is impossible to give *too much* review of these principles.

19th day. By means of "T" accounts show the progress of the original transaction as:

A	B	C	D
Merchandise	Blank & Co.	Notes Payable	Cash
150	150 | 150	150 | 150	| 150

Note that A and D balance after final transaction.

Discuss each step, have pupils tell in detail all steps taken, develop entry when paying a note. Pupils may make "T" accounts on Blackboard to impress it further in mind.

21st day. Show by means of "T" accounts the progress of this transaction.

Mdse.	L. Baker	Notes Receivable	Cash
| 60	60 | 50	50 | 50	50 |

Discuss transactions, make entry.

Nothing new until 21st day.

Notes

Drill 52

Closing the Books

Review as before.

Depositing checks—new.

Show indorsement of checks, different forms, uses, etc., this is "for deposit." Make deposit slip. Listing checks separately, and giving name of city in which bank is located.

In check book give *name* of person who signed the check. Make Bank Book and Check-Book entry.

There is nothing else new in the list of transactions. These may be made in greater detail or more or less of them as desired.

These given are typical.

The records should have been posted daily, and after the last posting take a trial balance. Next have an inventory taken. The teacher should work out the transaction before hand in order to have the inventory produce a profit or loss as desired.

By means of the data from the mdse. account and the present inventory prepare the trading section of the income and Profit and Loss statement.

Next, by means of Journal entries, close the Mdse. acct., compare the Profit thus shown with the gross profit of the Income Profit and Loss statement.

Through the journal, complete closing the Ledger, complete Income Profit and Loss statement. Make balance sheet, take post-closing trial balance.

This closes the books and opens them for the coming period.

Notes

PART THREE

Selected Reprints from the Model Store Keeping Department of Educational Foundations Magazine.

(Reprinted from Educational Foundations for February, 1916.)

Dr. Maximilian P. E. Groszmann, of Plainfield, N. J., known throughout the country as educator, author, psychologist, lecturer, reformer, and organizer, is expert in Child Study. He is at present developing his special work for the City of New York.

As President of the National Association for the Study and Education of Exceptional Children, Dr. Groszmann, with his thorough and scientific habits, has done a pioneer work for the better understanding of child psychology and the adoption of methods best fitted to give practical and permanent results.

For the assistance of Model Store users he has written an outline of his comprehensive development of the uses of our equipment.

A method standing the test of close investigation and experimentation on the part of so astute and scholarly a teacher as Dr. Groszmann must be sound and destined to wide adoption by progressive teachers. The equally forceful approval of many other prominent educators has been accorded this work.

Dr. Groszmann's syllabus follows

Preliminary Work in Connection With the Model Store

1. Make an alphabetical list of all firms and manufacturers represented, and give their addresses.
2. Make a list of the articles they have furnished.
3. Count and record the number of samples of each article.
4. State the price of each article.
5. Compute the value of each set of articles, in terms of sale price.
6. Compute the sale value of the assortment of goods from each separate firm.
7. Compute the sale value of all articles in the store.
8. Make a preliminary ledger entry for each firm, stating the number of articles furnished, adding sale price in parenthesis.
9. Figure the buying price of each article, and then of the entire lot, at different percentages of discount: 10%, 20%, 25%, etc.
10. On this basis, compute the entire investment in equipping the store.

11. On the same basis compute the gain over expense of equipment.

12. Ascertain, by writing to the various firms, the actual discount granted to the trade, and make your final computation on that basis.

13. Make your entries in the ledger accordingly, showing what you owe the various firms.

14. State what each article is made of, what its use is, and whether it is to be used in the laundry, or for general household work, for clothing, for food, as a condiment, etc.

15. Study the process of manufacture of each article. If possible, visit the factories.

16. Compute the expense of equipping the store with shelves, counters, scales, etc., also possible rent, heating, etc., as well as wages, advertising, etc., and compute the actual profit left over from the sale of all goods after deducting these items from the gross gain.

17. Compute possible losses through deterioration of goods, leftovers, bad debts, etc., and deduct these from the apparent "actual" profit.

18. Compute discounts, and consequent gains, from cash payment for goods.

19. Compute losses through delayed payments, the giving of notes on which interest has to be paid, etc. In this way, establish the final profit accruing from handling the lot of goods on hand.

20. Establish a system of bookkeeping, including day book, ledger, customers' accounts, etc.

In the actual selling and buying exercises, with toy or actual money, the making of change, drawing up of bills, checking up deliveries, etc., will be introduced. Household accounts, cost of meals, etc., may be computed.

The wrapping of bundles and packages, getting them ready for shipment, by team, express, or freight, will give opportunities for manual drill. Compute cost of delivery, value of wagons and teams, cost of maintenance, etc.

Bran, water, and other substitutes may serve for measuring dry and liquid quantities. Such vegetables as lentils, peas, beans, oatmeal, etc., can be obtained and used "in natura." In summer, fresh vegetables may be added, also fruit, nuts, etc.

All these exercises give opportunity for arithmetical work in all four operations; fractions, decimals, ratio and proportion, etc., etc.

Connection with manual training, art work, geometrical relations, nature work, arrangement of space, geography, commercial law, etc.

President Churchill States the Need

On January 17th, 1916, the New York Herald published an interview with Mr. Churchill, President of the New York Board of Education, from which we quote as follows:

We have italicized the salient points.

Mr. Churchill went on to say that while he has respect for system and organization, he has also had respect for the protests of citizens who are paying for the schools. The Board of Education, he said, has finally established the principle that a course of study is not so sacred a thing that it cannot be made over.

"We have made headway in showing that an education based wholly on

books, on suitability for introduction to a learned profession, is a moral and economic waste for a people concerned in so vast a majority with trade and industry. We are demonstrating that tax-supported schools may not, with fairness and justice, be used for the creation of scholars, but that their right and lawful function is to train citizens able to make their own way and to contribute to the common good. This, if I read aright, is the trend of intelligent American thought and purpose, as concerned with the schools.

"With the common schools we have made a distinct advance. Every part of the course of study has been modernized. As fast as money could be had we have put in equipment by which the children have gratified a long suppressed instinct to make, to create, to build with their hands and to know the real world about them. At the same time the courses of study in reading, writing and arithmetic have been maintained, and our children have as much opportunity for mastering these essentials as they ever had.

"However, I want to say that the need of self-reliant citizens was never greater than it is today. The young graduate of the elementary schools is going into a world of trade and industry.

"**The core and center of our public school teaching needs to be changed. It was transported from a system which proposed to fit children for a life of learned discourse, minute scholarship and composition with the pen. But our boys are not destined for these things. They are headed straight for the store and factory. The continuation of our bookish, literary centered courses of study is therefore absurd and unfair.** *We must substitute for this over-emphasized grammar, language and literature a preparation for successful mastery of the principles of industry and trade.*

"We need a grammar of machinery instead of the analysis of the parts of speech. *We need a mathematics of cost and losses, of construction and estimate,* instead of the Euclidean geometry of the present course. We need *a geography of resourses, of products, of lines of transportation* in place of the study which is current in the schools.

"One powerful aid to the modernization of the common school course so as to fit for an industrial civilization is that the manipulation of tools, the management of machinery, the construction of something, take hold of the human instincts of children and *generate an interest which is superior to any attraction the American boy has ever felt toward the traditional instruction.*"

The Model-Store gives to arithmetic, language, etc., just the interest that President Churchill describes and thereby promotes more rapid familiarity with the fundamentals. Our lesson suggestions also cover the other topics he mentions, which the teacher may add at her pleasure in the time that remains after the class has attained that real proficiency in the basic factors which today is so hard to accomplish by abstract methods within the allotted time.

(Reprinted from October, 1916 *Educational Foundations*.)

Why is a Profit?

What should follow the three R's in a practical curriculum? The business man's idea of this may be very surprising to educators, yet we venture to present a few suggestions by a business man who has been pondering the progress of his children in an elementary school.

To fit a child for modern life the first question of importance following the three R's would be, "Why is a profit?"

It strikes us that this question has never been placed in any curriculum and possibly has never been asked of any grammar school student.

The utility of education should be to enable the coming citizen to make a profit by performing a mental or physical service and thereby earn a livelihood.

How early in the curriculum this idea (taken from the subject of economics) might be brought to the attention of the children is for practiced educators to say, but the writer recalls the fact that all through his school day studies of profit and loss he accepted the fact that profits are charged in business transactions without any understanding of **why**. Though the question often crossed his mind he never asked it for fear of ridicule.

Playing house and playing store are among the earliest diversions of childhood. It is because these are the first occupations of their elders that they observe and comprehend. The Model-Store work takes hold of this strong predilection to interest the child in problems of the class room. Why not the problem of living also?

Very early in life it is possible to show a child that the grocer who buys several barrels of food and stores them, selling a little at a time to each customer, saves all of the customers the expense of buying and storing quantities of goods and enables twenty families to enjoy a hundred articles; whereas if each family had to conduct its own purchases on a wholesale basis the twenty families could hardly raise enough money at one time to get more than the bare necessities, and probably not over twenty-five different kinds of things would be available at all times.

In fact this is the exact difference between the days of our ancestors and these days of modern business development.

Not many years ago it was necessary for each family to lay in a whole winter's supply of wood, flour, potatoes, sugar, bacon, preserves, coffee, tea and other articles. This involved the investment of most of the year's earnings.

Farmers may yet be found in almost every state of the Union who are so far removed from commercial centers that they still pursue this system. You will find them living without variety, almost without entertainment, in a condition that leads to little mental exercise, dullness and relative hardships.

Whereas, given easy access to a store, a little of each of many things may be bought for the household with a negligible investment in the stock of articles on hand, leading to variety of diet, of entertainment, social inter-

course, and many of the basic advantages that develop civilization.

This is the **service** that the retailer renders the community for which he takes his profit, **and earns it.**

The community service rendered by transportation companies, water, electric, gas, and telephone or telegraph companies may be explained, as also, the personal service of running an errand for a neighbor.

This can be made clear to the child very early in life.

A large proportion of our young school children earn pennies by rendering services at home or to neighbors and almost as many are looking forward to leaving the school while still young to add their earnings to the family income.

The quicker you can begin to teach the child the economic principles underlying the earning of money the better for the child.

By so doing you have taken the first step toward a new curriculum.

Therefore assuming that a means of communication with the world has been established by a working knowledge of reading what comes from others, of writing what we would communicate to others, and of "ciphering" on any kind of transaction that occurs in life, the business man's next step is summed up in demonstrations of the reason for the making of a profit.

The Model-Store provides means to make this clear much earlier than would otherwise be the case. It also enables the teacher to give practical instruction in purchasing for the household wisely and to advantage as part of the acts that occur in the Model-Store while demonstrating the arithmetic lesson specified in the syllabus that is being followed.

The facts that spices are bought in small quantities, sugar in larger quantities, flour, potatoes, etc., in still larger quantities, breakfast foods and incidentals in proportion, can all be developed by the teacher in preparing her Model-Store arithmetic lesson so that the whole class whether boys or girls can gain practical knowledge that they are going to use all their lives and that they will **begin to use earlier** than any other specific thing taught at school.

If the report of the Special Food Committee appointed by the Mayor of New York which stated that forty-per cent of the retail purchasing is now done by school children is anywhere near representative of conditions elsewhere, it can be said that a large proportion of the children in your class room are now actively concerned in the problems of purchasing for the household.

The next step is that the earliest form of employment when the child leaves school or works outside of school hours starts the need for a knowledge of bargaining. It becomes at once a question of paramount importance, whether it is a sale of personal labor or an active part in the work of a retail store. Fortunately there are not many states where these younger children can be employed to operate machines in factories.

Most of our suggestions to the schools using our Model-Stores have dealt with the employment of the equipment for teaching the regular curriculum more rapidly and more easily. But progressive teachers everywhere are taking advantage of

the presence of the store to convey the fundamentals of such knowledge as is outlined above along with the demonstrations of the principles of arithmetic.

Strange as it may seem, these work together without the slightest loss of time and in fact the commercial lessons referred to greatly increase the active interest and mental focus of the children during the store lesson period.

Store keeping and store patronizing will inevitably form a large proportion of the life experiences of every child who sits before you in the class room. The quicker they get their bearings in the field the better for them and the better their understanding of all the problems that you will bring before them. This applies not only to arithmetical problems but those involved in the study of English and the other studies in which the store is employed.

There are hundreds of ways of putting the question "why is a profit?" since it is one of the biggest questions of human life, doubtless the biggest with which your little charges will have to grapple. Play store with them, play house with them, buy for the house from the store and make the class room, at least during the Model-Store period, a happy place in which they live a real life free from drudgery and full of real things of absorbing interest.

Written for and first published in *The Training School Quarterly*, published by the East Carolina Teachers Training School of Greenville, N. C.

While apparently using the big arithmetic factor only for a single low grade, Miss Strong went so far along the lines of language, spelling, sanitation and other uses which she lists in the article as to be a great help to teachers using Model-Stores in getting broader results

(Reprinted from *Educational Foundations* for November, 1915.)

Using Number Combinations to meet a Social Need

By Helen Strong

A teacher who has the earnest desire of fitting her pupils for life's responsibilities while they are children will, when preparing lessons, look to see how the facts she has to teach are used daily. For example, the course of study requires of the second grade that they know how to add such combinations as these:

10	20	25
5	15	25
—	—	10, etc
		—

The first question to arise in the teacher's mind after reading this requirement should be, "Do children need to have such knowledge now or even when they are adults?" If so, how do they use such knowledge? The question is solved when she realizes that most children as well as adults have to go on errands to the grocery store many times a day. Then, too, there is something in being quick and exact in addition of prices and in the giving and receiving of money in exchange.

To reproduce life in the schoolroom as nearly as possible, has been found to be the best and most interesting means for efficient teaching. Knowing this and having in mind the idea that life demands number combinations, when buying from the grocery store, the teacher thinks of the possibilities of having a grocery store in the schoolroom. On putting the question to the children she finds that they can make quite a usable one. Several orange or egg boxes when put together upright can serve as a counter. A board for the top of the counter may be desired as a better finish, and the size is determined by measuring off the length, width and thickness after the boxes have been put together, allowing a few inches for the usual counter projection.

The problem of shelves is now met by the children, who may decide on the number of shelves necessary and their length, width and thickness and how they can be firmly placed with the help of the corner of the room. These children, guided by the teacher, have done some real live thinking in measuring off the desired boards and have incidentally learned feet, inches and yards as they will be used.

[Miss Strong then describes the labor of gathering equipment which users of our "store" receive in superior form, and continues:]

When stocking the store the idea of orderliness of like articles is found necessary for efficient business. Paper bags, string and a cash drawer are also necessary on the counter for a complete equipment.

On asking the children if they are quite ready to play store they will discover that money is needed for both buyer and seller. The nickels, dimes, half dollars and silver dollars can be made from gray bogus paper, while the pennies can be made from brown paper. A perfect understanding of the prices of articles to be bought and sold is found to be worth knowing, too, so the exact price can be marked on a small square of paper and then pasted on the articles to be sold. * * *

After placing the grocer and the helper in the store the actual buying can begin. Difficulty will arise, however, from the slow and inaccurate handling of prices and money so that the children will feel the need for actual practice on the possible combinations which are required to be taught. This gives a motive for drill, and after several periods of practice on the necessary combinations of numbers the children will experience great delight and satisfaction in going and coming from the store. From playing going to the store it will be evident that each child should tell the class before going, what the purchases and change will be, so as to determine whether he is a fit buyer, so the pupils will make some rules to regulate the buyer. Written work can grow out of this idea of the grocery store. This question may be asked, "What does mother do when she wants several things from the store, and fears she will forget one or two of them? Write them down."

[A sample of an order is given but as these vary with every lesson and in Model-Store work attain more elaborate forms, the point that spelling, language and writing, with original composition are involved may be noted and the space required for the schedule saved.]

[The playlet which follows shows the earnestness of the teacher and may be used or paralleled in many ways. In one of "our schools" a very elaborate play was given in costume during the graduation exercises in which the children represented the different foods their bodies require to be healthy, dressing to represent many of the well-known trade-marks and drawing on the Model-Store liberally for the material and suggestions for costumes. There have been other successful efforts of this kind but this is the only one the writer has been privileged to witness. Any interested teachers by writing to us may be placed in communication with the principal of this school (a school with a National reputation amongst educators) and we believe can obtain data for conducting a similar play involving real lessons and arousing the interest of the pupils to the highest pitch. Miss Strong's happy little playlet follows:]

"Should the completion and enjoyment of the store come about Thanksgiving when the children like to have a play or entertainment to celebrate the occasion, the idea of the store might furnish the means for such

a celebration as it did to the children of Speyer School. Knowing as they did that Thanksgiving was a time for offering thanks for material blessings during the year and looking after the poor, it was decided that a play which involved the buying of food from the grocery store for the purpose of giving to the needy, would be enjoyed by the other grades. With that purpose in mind, the following play was created, planned and carried out during the literature period.

Scene I

Children Playing at Schoolmate's Home.

(Children are all seated about on the floor, looking at books and dressing dolls.)

Stewart: Boys and girls; Thanksgiving is nearly here.

Hortense: Yes, I'm glad, because we are going to have a big turkey dinner.

Marion: My Aunt Nellie is coming to see us that day, too.

Elizabeth: I shall be eight then, and I'm going to have a birthday party.

Egbert: It's a day poor people are made happy by getting good things given them to eat.

John: Wouldn't it be nice if we made some poor people happy by giving them something to eat?

Hortense: How can we do it?

Stewart: Save up our pennies.

All (clapping hands): Yes, let's save up our money.

Elizabeth: But whom shall we give the basket to?

Marion: My mother knows a Mrs Jones who has six children and no husband, and they are very, very poor.

All: Let's save up our pennies for her right away. Good-bye; good-bye.

(Children depart for home after saying good-bye to their friend Elizabeth.)

Scene II

A Week Later at Elizabeth's Home.

Stewart: Let's count our pennies.

Egbert: I have thirty-eight cents.

John: And I have twenty-one cents.

Elizabeth: Fifty-five cents is all I could save up.

Hortense: I have exactly seventy-five cents.

Marion: I've enough to buy cranberries and sugar—thirty cents.

Egbert: What shall we buy?

Hortense: I'll buy potatoes, apples, oranges and bananas.

Marion: I'll buy cranberries and sugar.

Egbert: My money will buy crackers and Franco-American soup.

John: I would like to buy a can of peas and corn.

Elizabeth: And I'll buy bread and butter.

Stewart: I've one dollar and fifty cents. So I can buy two cans of chipped beef, two cans of potted chicken, two cans of plum pudding, coffee, cocoa and tea.

Hortense: Where shall we buy our things?

Stewart: Come with me. I'll show you a good grocery store near Speyer School.

(Children start for grocery store.)

Scene III

Children at Grocery Store.

(Given in play store. Grocer waits on buyers with the help of the clerk.)

Stewart: Will you please put the things in this basket I've brought.

Grocer: Where is it to be sent?

Marion: Here is a card all written. How do you like it? Mother helped me. "To Mrs. Jones and children, with best wishes for a happy Thanksgiving from some Speyer School children."

Hortense: That's fine. Grocer, fix the basket up nicely and send it right away.

All: Good-bye. Good-bye.

Scene IV

Mrs. Jones' Home.

Johnnie Jones: Why don't we have a good Thanksgiving dinner like other people?

Mary Jones: Because we are poor and have no father to work for us.

Mrs. Jones: Isn't that a knock? Yes. I'll go to the door.

(Mrs. Jones opens door.)

Grocer: Groceries, ma'am.

Mrs. Jones: I didn't order any groceries.

Grocer: This was bought and ordered sent to you. Read the card.

Mrs. Jones: Children, look what has been sent us by some good little children. Now for a good Thanksgiving dinner for us all.

All: Give me an orange, give me an apple, give me a banana.

Mrs. Jones: Here is an apple for each of you, but before we eat it what would be nice for us to do?

Johnnie Jones: Let's sing our grace.

All: Yes, let's.

"Thank Him, thank Him, all little children,
God is love, God is love."

(Mrs. Jones sits down with children and all sing grace with bowed heads.)

END OF PLAYLET.

The idea of having a grocery store in the schoolroom could grow out of the new subject of Industrial Arts as well as out of arithmetic. Since the source and preparation of manufactured foods is a problem to all, it can well be treated in connection with the grocery as one of the sources, with its food supplies of various kinds. Such problems as these could be taught interestingly and instructively to the children:

1. How are fruits and vegetables canned? Let children can a quart of fruit.

2. How are.....pickles made? Pickle in school a glass or so of small cucumbers.

3. Where does sugar come from and how is it made? Get sugar cane, and after crushing the juice out, let it boil until a sugary state is reached.

4. How do we get our salt? Make refined salt from crushing, cleaning and boiling rock salt.

5. Where do tea, coffee, and cocoa come from, and how are they prepared for buying in the grocery?

[We will supply any needed information concerning such questions.—Ed. of Dept.]

There are many other articles of food still left in the grocery to be taught. These could be made the basis of other lessons varying in informational value according to the needs of varying localities. Very helpful charts can be made in school by the children. After the knowledge is gained they will be able to use it in compositions and pictures for the purpose of exhibits.

"The Health and Sanitation" department in our Training School would say that the grocery store had its place in the schoolroom since much could be gained from discussions as to old and recent dates marked on canned goods, the handling of such foods as cakes, candies, loose pickles, sugar, etc., by an unclean grocer; the cleanliness of the store in general and disastrous results likely to occur when men, cats, mice, and flies are allowed to sit about on articles, particularly flour sold in cotton bags where dirt can sift in and out, will prove a profitable topic. To sum up, the grocery store has a place in the schoolroom from the point of view of its assistance in Industrial Arts, Spelling, Language and Literature, Writing, Hygiene and Sanitation, and in particular for its most commonly used way of exchanging money for food in number.

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The Beowulf of Arithmetic

A friend much interested in the method gives us the following estimate of its value in the department of arithmetic:

Like the hero of the old Anglo-Saxon epic, who banished the monster Grendel to die in the fens, the "Store" has robbed arithmetic of its traditional terrors. Nary a boy of us has grown to manhood without spending a portion of our playtime at "keeping store." While store keeping has been numbered among our joys, conventional arithmetic has bristled with trouble. Could we have blended the **play** with the work we might have taken our arithmetic with less trepidation and with more profit.

Dr. David Eugene Smith, Professor of Mathematics at Teachers' College, Columbia University, in a recent report to the New York City Board of Education on "Applied Problems in Arithmetic" designates four kinds of problems, viz.: isolated, group, narrative and real situation problems. His criticism of the first is that it is in no true sense of the word concrete. Of the second he declares that it is more artificial than the first, the child soon wearying of examples all dealing with a subject in which he has no natural interest. The narrative form has all the disadvantages of the group plan with the added difficulty that one error persists through all the rest of the work thus vitiating it to the discouragement of pupil and teacher like. As to the fourth or real situation problem Dr. Smith declares that it is exceedingly difficult to make up sets of this kind so that they may seem any more real than the isolated problem. The time required to make up a satisfactory set of such problems is practically prohibitive. Bringing the test of these criticisms to bear on the Model-Store-Keeping Method we find that not one of them is applicable. The teaching is concrete and real in the truest sense, the child's natural interest is maintained throughout, the errors are quickly detected and corrected without vitiating the work, and problems innumerable actually formulate themselves.

The simplest forms of number work are capable of attractive illustration, while the fundamental processes of addition, subtraction, multiplication and division are easily comprehended. Factoring, fractions, denominate numbers, percentage, discount, etc., are studied in the various transactions carried on by the pseudo-merchants and their patrons. Mensuration can be demonstrated by the use of the cartons with their various sizes and shapes. So it would seem that as an effective machine for the illustrating, emphasizing, and popularizing of the study of arithmetic the "Model-Store" is bound to be successful. Cases could be cited where children considered very backward and well nigh hopeless have been awakened to a quick understanding of the subject by this method. In classes for defective children much can be done to interest and to help the handicapped pupils, while the brighest boy in the school will find his progress accelerated.

So Grendel has been vanquished.

(Reprinted from January, 1916 *Educational Foundations.*)

The Power to Hold Attention

There's a difference in teachers.

Just as pupils, even after careful grading, are so widely different in capacity that every class is a difficult problem, so a group of teachers presents a parallel problem in varying effectiveness to the principal.

Yes, and some principals are equal to the requirements while some are—well, hardly.

The human-nature factor in education, as it affects and explains teachers, methods and teaching, is the least discussed factor, but the governing one, nevertheless.

There are public school teachers so earnest and able that they are fit to be given charge of classes of backward children, to mould their characters, as well as to store their heads with information, each to its capacity. There are others who should by comparison be in a "backward" division for teachers if it existed.

And the dividing line is *not* drawn by *knowledge.*

Each teacher has attained a standard in knowledge, has passed examination in the things she is to teach.

Unquestionably all teachers know much more than their pupils know. They possess the information to be imparted. In what, therefore, do they differ?

Most people will answer "In the power to impart the knowledge," or "In the ability to maintain discipline."

Right—but that is a name for a disease—not a diagnosis.

The real answer, covering both the others is this.

The power to hold attention.

The one universal thing that you can count on in all children is prompt and keen attention to anything that interests them. Their focus is the keenest in the span of human life.

They learn more and faster than any adult because nature made them so, and the way they learn is by the all absorbing focus of all their powers upon the thing of the moment. It shuts out all else.

The glitter of tinsel catches the baby's eye. The spirit of play, of fun, of novelty, of anything unusual catches the child's mind. Instantly and completely all else is put aside and the whole power of an able, unburdened brain is focussed on adding "for keeps" one more new experience to the store of knowledge that the active little intelligence unconsciously seeks.

Children Want to Learn Things That Interest Them

Bright, active, idle, slow, lazy, mischievous, playful—you have them all in each and every class and grade.

Let a regiment march by, headed by a good band in full play, tell the pupils they may go to the windows—and count those who remain in their seats.

Also count the teachers who will tell the pupils to count the men in each rank, and the number of ranks, and make multiplication practice to ascertain the number of soldiers out of the *attention* factor so suddenly gained.

The count of teachers will be small for most of that kind have been gobbled up at higher salaries by private schools, or have becsme principals.

Given this hint, and an opportune military band, *every* teacher would

make use of the incident as a lesson.

Yes, and in every class, some few slow, discouraged children would get a clearer comprehension of their study and the reason for study and the application of its dull routine to the interesting things of life. This would make it easier for the teacher for the rest of the term. The time she would have had to devote to dragging those slow ones along could be devoted to pleasanter occupations.

True, the band would have to appear many times at regular intervals, always in the nick of time for each class, before the aggregate gain in saved trouble would assume enough importance to be recognized by the teacher as practical help. And the number of arithmetical elements that could be so illustrated is extremely limited.

Anyhow, you can't get the band.

But you can use a "Model-Store."

The power to hold attention. so lacking in most humans, even teachers; so powerful in the band, so *necessary* for easy teaching, comes with the store. It is a maximum power, and the number of its applications is endless.

Every step in arithmetic can be made clear by using the store, and the whole class will *pay attention*, focussed, acute, minute, effective attention—the absorbed kind that only childhood can give. The kind that instills the teacher's superior information into the pupils' comprehension for life.

It makes teaching *easy*.

A military captain who was widely admitted to possess superior knowledge of the books of tactics aspired to have his lieutenants, sergeants and corporals the best informed and best drilled in his regiment. Many a weary instruction period and drill, constant extra labor willingly performed, was fruitless. He hadn't the power to impart his unquestioned knowledge. He couldn't hold the attention of willing officers. He was too hard to follow, he could not maintain discipline: their thoughts wandered and unintentionally they found their minds occupied with other affairs while his careful instruction proceeded unheard.

But he secured a group of toy soldiers, to be moved about a table in illustration and that brought success. Those grown men moved the toys from point to point with focussed attention. They learned all he knew: He held their attention.

A little school girl who learns everything with amazing rapidity gets low marks in most studies; high, in those she likes.

She was sent to the principal the other day for reading a book passed to her by another student while three problems in arithmetic out of ten remained to be done. Her only defense was that most of the class were doing the same. Being sent to the principal didn't help her any. She did wrong, but she was not to blame. A big percentage of that class failed in its last examinations. The teacher is refined, well educated and earnest. But she doesn't *hold the attention* and discipline is also as poor as the results in teaching. All because she cannot hold their attention.

Even among teachers who have recognized this need for an object, a class room lens to focus the attention of all at once, who took a little trouble

to find out how best to use the "Model-Store," who count their store as now essential to their own comfort, there is wide difference in appreciation of its possibilities.

Some use it only for simple problems. Some say it is best in higher grades. Some use it only for arithmetic while others teach language, drawing, geography, domestic economy, relative value of foods, wise purchasing, neatness, orderliness, personal initiative and many other details that develop naturally and without loss of time.

In the whole term they save themselves much time and lots of trouble.

And they make a better personal record in the eyes of the principal, the district superintendent—*their employers*.

This helps the principal to make a good record in office, to show an efficient school to the superior officers

It finally shows the superintendent a saving in the costs of school administration.

Thus it does for the adults what it does for the children—proves its value in the practical problems of daily life.

The power to hold attention, the hardest thing to acquire, the most necessary thing in dealing with children, is supplied by the Model-Store.

(Reprinted from Educational Foundations Magazine, issues for April, and May, 1916)

The School Store

By Effie L. Bean

Teachers, have you ever had a store in your school-room? What was your purpose in having one?

Did your pupils gain as much from it as you expected?

If not, why not?

A store in each school should be as necessary a part of that school's equipment as its furniture, for we can correlate it with almost, if not all, subjects taught.

Like many another institution, all its possibilities have not been realized.

Upon first thought the idea of a store brings to mind the teaching of arithmetic only.

Altho this is the primary reason for the store, it is far from the only one.

Let us see in how many ways we may be benefited by this institution in our schoolroom.

In the arrangement of goods upon shelves and counters we are taught neatness and harmony.

Let the different children take charge of the arrangement of these goods and let other pupils compare results.

Whose arrangement do you like best?

Why?

Why is it the best to have like goods placed together?

It does not require a great amount of space for a store.

An alcove or one corner of your room will be sufficient.

Manual training classes may contribute to the store by making and placing shelving and counter.

A board across two chairs or boxes may be used for a counter.

Signs may be placed upon the walls and shelves to show where the articles belong. This helps to inculcate orderliness and saves time when restoring the goods to the shelves.

Teacher and pupils will become so enthused that they will delight in adding to their equipment by bringing articles of their own, such as a few pint and quart milk bottles, scales, pint, quart, gallon, peck and bushel measures. These add much to the realism of the store.

After using these measures for a short time the tables of liquid and dry measures will be memorized almost without conscious effort upon the part of the child.

Let the children make suggestions freely. Some one will be sure to suggest an ice box in which to keep milk and butter.

Here again the manual training boys may come to the rescue or perhaps some boy or boys will offer to make one at home.

Altho at first it may be necessary for the teacher to suggest what the children shall buy, in a short time they will become more confident and select for themselves.

Have frequent changes in storekeepers, clerks and customers, so all may get the different experiences.

The conversations between merchant and customer are fine oral language lessons. They teach the child to make complete statements and are conducive to good expression.

Politeness and good manners are taught in the same way.

Customers politely await their turns and the storekeeper shows no partiality in waiting upon them.

Encourage customer and merchant to talk while making and putting up purchases.

Here again naturalness of expression is easily obtained.

For example, the following conversation actually took place in one of these stores between storekeeper and customer.

Storekeeper. "Good morning, Mrs. Jones."

Customer. "Good morning, Mr. Smith."

Storekeeper. "What can I do for you this morning?"

Customer. "Have you any fresh eggs today?"

Storekeeper. "I just received some this morning which I know are fresh."

Customer. "How much a dozen are they?"

Storekeeper. "They are thirty cents a dozen."

Customer. "I'll take two dozen."

Storekeeper. "Is there anything else today?"

Customer. "I'll take a pound of butter and a cake of chocolate."

(Storekeeper does up the packages and customer pays for them and picks them up ready to depart.)

Storekeeper. "Good day. Call again."

Customer. "Good day, Mr. Smith."

Storekeeping time provides an excellent opportunity for teaching neatness, order and cleanliness.

Think of all the stores you know.

Which do you like best?

Why do you like the neat and clean one best?

How should the storekeeper and his clerks look?

Should they have clean hands? Why?

Which storekeeper should we patronize, the clean one or the opposite?

Remember that the children are our future citizens and it is to them we must look for the raising and improving of our standards.

If we can get the children to appreciate the needs of cleanliness in all things we have done much to educate those children to become good citizens.

The store may furnish many topics for language work, such as compositions upon the various articles exhibited, as, A Study of Tea, How Butter is Made, A Visit to a Candy Factory.

If possible take the children to a mill or factory and let them observe the various processes, to be reproduced next day in school.

Dictated sentences such as the following may be given.

Daisy bought two dozen eggs.

They cost thirty cents a dozen.

Do you like candy?

"Good day," said Mr. Jones.

To me the store is the merging point of all or nearly all subjects taught in school.

Lists of canned goods, fruits, vegetables, as well as their use in short sentences, provide us with material for our spelling lessons.

Geography and history could have

no finer incentive than the store provides.

A pound of tea will suggest a study of the tea plantations of China, the different processes necessary to bring tea to its present state, climate of the country, its people, their habits and manner of living, other products of the country. Study other tea producing countries and compare them.

A sack of flour will be the basis for a study of the growth of wheat, wheat producing countries, process of making flour

Of course a visit to a flour mill at this time, is the best means of teaching the latter, but where this is impossible very good ideas may be obtained through pictures and descriptions.

A can of salmon introduces a study of the fisheries and canneries of our country.

Sugar opens the way to a study of sugar plantations, the difference between cane and beet sugar, sugar refineries, etc.

In a similar way such articles as rice, spices, coffee, fruits, vegetables, oil, salt, cheese, etc., pave the way to a detailed study of different countries, people, products, etc.

During the history period legends, myths and stories of these different countries will be found very interesting.

During the recreation or physical exercise period folk dancing and games of these different people may be taught.

The store furnishes many a subject for drawing and painting, for example, object drawing of cans and measures, painting of fruits and vegetables as well as their modeling in clay or plasticine.

Our store also provides an abundance of material for writing, either of words, sentences or paragraphs.

Some of the national, as well as other songs characteristic of these different countries may be sung during the music period.

Domestic science may be benefited by a study of the different foods and their preparation for the table.

The store gives us ample opportunities for sand table work.

Think of the delight of the children in reproducing in the sand table the lives and habits of people in different countries.

With the present abundant supply of interesting readers containing stories of many strange lands we shall have no difficulty in correlating reading with our Store. The information stories supplied with the store are very useful for this purpose.

A study of the different forms of transportation used today as compared with those of past ages is interesting as well as instructive.

A brief study of food values during our hygiene period is time well spent.

It is unnecessary to say that as a factor in teaching arithmetic the store has no equal.

A quantity of toy money may be obtained from almost any supply house or it may be made by the pupils during seat work periods.*

After selecting storekeeper, clerks and customers, provide each customer with a certain amount of money.

Of course the merchant must have

*Educational Foundations Model-Store-Keeping Department sends toy money to store users on request.

a supply of cash on hand so he may make change when necessary.

In the lower grades let the children begin by buying one article and paying for it and gradually increase the number of articles bought.

Upon their return from the store let customers tell in complete statements what they bought, the price of each article, the cost of the entire purchase, the amount of money possessed and change received.

Let one child go to the store and buy three or four five-cent things, and another three or four ten-cent things, etc.

How many five-cent articles does it take to equal one ten-cent article?

How many five-cent bars of soap can you get for a dime? A quarter?

How many ten-cent packages of (———) can you get for a dime? A half dollar? A dollar?

How many for a quarter?

Would you have any money left?

How much?

What could you buy with it?

Get the children to see that there are five nickels in a quarter, five dimes in a half dollar, four quarters in a dollar and two half dollars in a dollar, by grouping different articles as, four cans of baking powder for a dollar, five bars of soap for a quarter, five packages of breakfast food for a half dollar, etc.

During this time the children will almost unconsciously learn the number of cents in a nickel, a dime, a quarter, a half dollar, a dollar; the the number of nickels in a dime, a quarter, a half dollar, a dollar; the number of quarters in a half dollar, a dollar and the number of half dollars in a dollar, etc.

In running your store teach business methods as far as possible.

For example, in making change, teach the store keeper to subtract by adding as real merchants and clerks do. For instance, if a purchase is as follows, soap, five cents, lemons, ten cents, chocolate ten cents and rice five cents, the total cost is thirty cents.

Suppose the customer tenders a half dollar in payment. The storekeeper then gives him his change, either two dimes, or four nickels or a dime and two nickels and counts in this way—thirty (amount of purchase) forty, fifty (adding the two dimes) or thirty, thirty-five, forty, forty-five, fifty (adding the four nickels) or thirty, forty, forty-five, fifty, (adding the dime and two nickels) as the case may be.

Such methods are practical and businesslike.

Our store provides practice in the use of fractions, i. e., buy one and a half pounds of butter, three-fourths of a pound of cheese, two-thirds of a pound of rice, one-half gallon of oil, etc.

Practical work in measuring is done by using sand or sawdust for sugar, rice, etc.

A few vegetables may be brought by each child and thus a sufficient supply may be obtained with which to do actual measuring by pecks and bushels.

See how many things in your store are sold by the dozen, the pound, the bushel, pint, quart or gallon, etc.

Let pupils arrange for special sales by placing placards, prepared by themselves, in conspicuous places, or by writing out advertisements.

See whose work is best and will attract buyers, which is the prime object of advertising.

Orders for goods to be sent to wholesalers may be made out, as well as bills to customers.

This sort of work gives the children a concrete knowledge of business forms.

Although at first it is best to do a strictly cash business, later charge accounts may be allowed and partial payments made upon them.

Occasionally let pupils take an inventory or account of stock and make records of sales.

A toy telephone increases the child's interest in the store and furnishes one more means of educating the child. They may be taught the use of the telephone as well as telephone etiquette.

Orders may be given and received in this way occasionally to give variety.

Has your store a delivery system?

Why is such needed?

What expenses has a storekeeper? (Rent, light, fuel, help, delivery, furniture, etc.)

Figure up expenses.

Now figure up profits.

See if the advanced pupils cannot originate problems for themselves or each other.

Could we not appoint a few salesmen and pay them a commission?

(Reprinted from *Educational Foundations*, February 1915.)

Discount Made Clear

Observing a lesson in discount during a recent call at a school, the writer was first told that the class was practically a unit in discovering for the first time through Model-Store work that "a discount is something you get back." That new comprehension made the lesson interesting.

But before it was half over the teacher turned to the writer and said: "What shall I do—they are all through?"

"Do they really understand it—every one of them?"

"They seem to, surprisingly."

"Well, for practice, have them figure the discount on each item purchased, add together and thus prove the first result."

They had caught the idea of a subject usually distasteful and hard to understand so quickly that the lesson period was too long.

Did you ever have that experience in abstract teaching?

Comments

No name in the history of Pedagogics shines more brilliantly than that of Johann Heinrich Pestalozzi. He lived to be 81 years of age. "Father Pestalozzi" they called him. His ideas have found fruitage in the educational progress of Europe and America.

Pestalozzi taught that knowledge is obtained through self-activity of the child and that instruction should be based on observation. He applied this principle in his own work as a teacher and made free use of objects in teaching number.

Pestalozzi would be happy in contemplating the work now being done by the aid of the Model-Store equipment. It is proceeding in full accord with his own theory.

Thousands of comments on the Model-Store work have been received. It is impossible to select the "best." The following include two previously printed, two letters received as this page is penned, and a group reprinted from the December, 1916 issue of *Educational Foundations* culled from the mail of only a few days. The spread of our work is due to what users say about our "store."

Dr. Wallin's Ideas

Doubtless every reader of *Educational Foundations* is familiar with the wonderful work conducted by Dr. J. E. W. Wallin. His recent efforts in the Psycho Educational Clinic of one of the chief cities of our land have added much to his fame.

We take pride in the following quotations, from a recent letter received from Dr. Wallin after we had sent him equipment for a Model Store, for experimental use.

"My observation indicates that the materials are of the greatest value in making concrete various processes not only in arithmetic and other academic branches but also in the socio-industrial activities of society. The Model-Store furnishes an excellent center for the correlation of a great variety of vital, practical interest. It is of great value with the types of children we have in our special schools for individual instruction. The children find the materials of great interest. I heartily commend the idea and congratulate you on the success which you have attained in gathering together materials for your Model-Store."

In another paragraph Dr. Wallin says:

"I frequently take occasion to refer this excellent set of materials to the teachers taking my lecture courses and to visitors in the clinic. However, quite a number of the teachers in our schools* * * have provided themselves with the Model-Store materials."

Dr. Goddard's Remarks

Dr. Goddard, of Vineland, N. J., standing before our Model-Store in a noted training school for teachers, said to our representative and one of our contributors: "Gentlemen, this is the most useful equipment that has ever been placed in our hands," after which he outlined a number of uses which have since been incorporated in our suggestions for teachers; for which aid we are deeply grateful to this justly famous educator.

Comments and Correspondence.

Reprinted from December, 1916, Educational Foundations,
Model-Store-Keeping Department.

"Men's minds are like their watches; no two go just alike, yet each believes his own." The writer's memory of that quotation dates back many years without refreshment and it may not be verbatim, but it contains the sense of what Pope wrote.

It comes to mind often during the daily labor of conducting the Model-Store work in the constantly growing group of progressive schools that are using this means to save the teacher's time and more quickly reach the comprehension of the pupils.

One group of letters asks for more printed matter, more information, more details. Our answer to this is this book of actual lessons gathered from thousands of sources.

Another group of letters shows that the writers have only skimmed a part of the printed matter sent them or they failed to grasp the significance of what they may have read because they ask questions that have been treated exhaustively in matter already mailed to them.

The third but more rare type of communication, from a school reported as having a Model-Store but not appearing on our lists, indicates that they are struggling to gather a store themselves on what they refer to as the basis of "personal ideas to meet local conditions."

To the conductor of this department and the organizer of this work it seems almost impossible that anyone could have conceived the idea that our Model-Store work is a cut and dried proposition. Probably no point has been more often mentioned than that the store is supplied as our contribution to educational progress with enough helps to give a teacher the idea but with the expectation that it will be developed by each school, even by each teacher in each school, according to personal ideas to meet local conditions—even individual classroom conditions.

The three classes of letters mentioned above are only general classifications and they can be subdivided into many different groups showing many forms of misunderstanding of matters that have been repeatedly stated in the plainest language and in many different forms, in order that what might not be clear in one case would certainly be made clear by a re-statement in another form.

But on the other hand there is a great mass of Model-Store users who understand and who use the store intelligently and in their own way to great advantage.

We take the liberty of quoting below from a few such letters very recently received and trust that the above will make it clear to every reader that we are not trying to tell a principal or teacher how to work, but only presenting to them information that will enable them to do their own work in their own way according to their own curriculum and to do it more effectively and with less labor.

A Doubter Converted

"Dear Sirs:

"When I received the offer of the Model-Store I had not much faith that it would benefit my class * * * but it has proved to be one of the most valuable of all devices for rousing their interest and fixing their wandering attention. Even the low grade children take part in the store activities, while the high grade ones have surprised and delighted me with the ability they have developed. Our superintendent was much impressed * * * I will gladly make room for everything you send us.

"Yours very truly,"

Too Good to Lose

"Dear Sirs:

"For over two years I used the store materials sent by you to the ——School. As I have been transferred to the ——School I am desirous of having the outfit for this school.

"I believe so thoroly in the practical help which the store gives and in the joy that the children find in handling real things that I hope you will send me the outfit as soon as possible.

"Thanking you for your generous treatment of me as principal of the ———,

"Yours truly,"

Uses Store Constantly

(The following letter was sent to a subscriber and forwarded to us.)

"Gentlemen:

"We are grateful to you for sending us packages to be used in our Model-Store. We make constant use of this store and find it a splendid means of teaching arithmetic and parts of other subjects. Dealers who contribute to this store are to be complimented not only for their enterprising spirit, but for their spirit of co-operation.

"Very truly yours,"

Materials Hard to Get

"Gentlemen:

"Your instruction sheet No. 1 has just fallen into my hands and I am very much interested in it. We have been trying to organize a store in this building but found it difficult to get hold of materials that were attractive and at the same time useful. I want to know more about it and will be very much obliged if you will send me any further information you may have on the subject giving me cost of equipment, etc.

"Thanking you in advance for your kindness, I am,

"Yours very sincerely,
(Signed) Principal."

Another Welcome "Repeater"

"Gentlemen:

"I am desirous of starting a 'store' in the——Public School and am writing to enlist your assistance in furnishing equipment for this store.

"Last year, as you may recall, I installed one of your stores in the public school in———County, N. J., of which school I was at that time principal. I was so pleased with results that I was determined, if possible, to continue the experiment in my new school.

"Trusting that you will be able to favor me, I remain,

"Very truly yours,"

Type of Equipment Correct

(The following letter was sent to a subscriber and forwarded to us)

"Dear Sir:

"We are making use of the Model-Store-Keeping outfit sent to us under the direction of the Educational Foundations of New York City.***

"The regulation package on sale, but empty, is the best material for us.

"Much good is coming to the pupils from the use of the Model-Stores.

"————Principal."

After Six Terms Use

"Dear Sir:

"Inclosed please find card signed as suggested.

"Our Model-Store is a feature of this school for 6 and 7th grade arithmetic. The live teachers use it gladly and keep it up in fine order. The children enjoy it and are profited greatly by their practice in buying and selling. We have 2000 children.

"This store will be open and working on Monday, Nov. 27, all day for the observation of teachers who will come to the State Teachers' Association. Should one of your representatives attend that meeting I should be much pleased to have him visit No. 31.

"We are cramped for space and have the 'store' in a classroom always full of children; but the teachers mentioned have worked out good methods of use and practice despite the handicap. Plans are being made for a new school to cost about a half million in which I will have a special room for it.

"Recently pictures have been made of the store in use, copies of which I will soon send you. I am sending check for a year's subscription to *Educational Foundations*.

"Thanking you for the help you have given us, I remain,

"Very truly yours,"

"Principal."

Recognition

January 11, 1917.

Department of Model-Store-Keeping

Dear Sirs:—

The Bureau of Education, Washington, D. C., advises me to write you for information, regarding a Model-Store equipment for school use.

I have been some months trying to find out where this was to be obtained and am delighted to know, etc., etc.

Yours truly,

More Recognition

January 15, 1917.

Educational Foundations
Model-Store-Keeping Dept.
New York City, N. Y.

Gentlemen:—

I was wondering how I could make my arithmetic class interesting when we came to buying and selling—making change, etc.

It was solved when I noticed in the Manual (the Wisconsin State Manual)

that I could get a school store keeping outfit by sending to you.

Yours truly,

The entire school systems of many cities have been supplied with the Model-Store. It is on requisition lists in others.

The number of Model-Stores is well beyond the three-thousand mark and all but a very few of these are the result of teachers seeing it in successful operation. The value of the equipment must be more clear to the educators who have used it than it is to us. They have the practical experience and we have only the testimony of which the above is a small fraction tho it represents the mass.

AUTHOR'S NOTE

Other volumes of this work will follow as rapidly as new drills develop.

All Model-Store users are invited to write out their successful class work and drills with the Model-Store and send them to the author at the publication office.

No smallest detail lacks interest. Every development of daily practice that will help other teachers is sought, even if it is only a modification of the drills herein presented. If the idea quickens the pupils' interest; if it provides another short cut to results; if it helps the scholars of slower comprehension, *that* drill or plan is needed for Vol. II. The rising generation needs this help.

Principals and teachers will render valuable service to the work if they will foward photographs of their Model-Stores, however small the picture.

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